The Boston Medical and Surgical Journal

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January 8, 1920

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Address.

PRESIDENTIAL ADDRESS OF DR. JOHN B. WHEELER, BURLINGTON, VT., AT THE ANNUAL MEETING OF THE NEW ENGLAND SURGICAL SOCIETY, BOSTON, OCTOBER 28TH AND 29TH.

Members of the New England Surgical Society:

It is a great pleasure to me, as it must be to all of you, to be present at our Society's return to consciousness, after the coma induced by the war. Animation has been suspended so long that the prospect of its restoration began to seem somewhat doubtful, but a gathering like this dispels all misgivings of that kind. We now have good reason to expect that the Society will resume the work which it began so well three years ago, and as time goes on "add materially to the sum of surgical knowledge," as Dr. Mixter said in his presidential address at the inaugural meeting in 1916.

We are happy also by reason of the presence of our distinguished guests from England, Sir Anthony Bowlby of London and Sir Robert Jones of Liverpool. In the name of the Society, I bid them the heartiest of welcomes.

Throughout nearly the whole of the last three years, nothing was heard of the New England Surgical Society; for the reason that all of its members, who were not disqualified by age or physical defect, or prevented by the nature of their work, or the condition of their families were serving their country, in camp or abroad; while those who were unable to leave home, were so busy with the extra work entailed by the absence of their colleagues, that they had no time for Society activities. But the Society has accomplished something, notwithstanding. The transactions of our first meeting would have been creditable to any scientific body, and though the Society as a whole has done nothing since that meeting, many of its members have made war records, of which we all may justly feel proud. Another, and what seems to me a most important thing, was accomplished at our meeting; namely, getting acquainted. I hope that it has given all of us as much pleasure as it has me. It was very pleasant to meet many men whom I had never seen before, but had long known by reputation, as well as to make the acquaintances of others, of whom I, in my remote corner of the Green Mountains, had never heard, but whom I found to be excellent surgeons and mighty good fellows. To quote Dr. Mixter again, "The great value of medical meetings is to meet men, to know men, and to get their views." Judged by this standard, our first meeting was a most valuable one.

Except in a very general way, a forecast of the Society's future work is impossible, as it must change with the progress of the science and art of surgery, as well as with the course of human events. But there are some matters of immediate importance to surgeons, which demand, and I am sure will receive careful consideration and intelligent action on the part of our Society. Hospital standardization is one of these. Much has already been accomplished in this direction, and not a few of our members have had a hand in the good work, but much more would be accomplished if each one of us would do his utmost to bring the hospitals with which he is connected, up to a standard which requires, among other things, properly kept case records properly followed up, proper laboratory facilities, systematic instruction of interns, and autopsies held in every possible case.

Another matter of great importance to us as surgeons is surgical education. What kind of training before and after graduation, is best calculated to give a young man the diagnostic accuracy, the sound judgment and the operative skill which he should have before taking up surgery as a specialty? The question has been discussed considerably, but the last word has not been said, by a good deal. Of course it never can be, really, for surgical education must change with the progress of surgery, but there is much to be said and done about education for the surgical practice of today, and this Society is capable of contributing materially to the solution of educational problems.

The other problems which most naturally claim our attention, are those which are directly involved in the practice of surgery. So many of them have been solved in the life time of even the youngest of us, that none of the remaining ones, baffling and forbidding as they appear, seem impossible of solution. Experience has often shown us the folly of hasty and ill-considered adoption of ideas which run contrary to its teachings, but it also shows the stupidity of declaring a thing to be impossible merely because we do not see how it can be done, or because it fails to fit in with our individual experience.

Some of us have had the great privilege of personal acquaintance with the late Dr. Henry I. Bowditch and to all of us he is undoubtedly known as New England's leading authority on thoracic diseases during a large part of the latter half of the nineteenth century. He was no surgeon and never made any pretense of being one, but he was enthusiastically interested in every department of medical science and his realization of the great surgical future which was just opening as he was going off the stage, was really prophetic. I have frequently heard of an occasion, not many years before his death, when he attended a meeting of the Surgical Section of the Suffolk District Medical Society. The subject of gall stones was under discussion. The operative treatment of this condition,—in fact, the possibility of surgical interference in the whole upper abdomen, was just beginning to occur to surgeons at that time. The consensus of opinion among the surgeons present was very conservative. No one seemed to consider it practicable to cure gall stones by removing them. When the discussion ceased, Dr. Bowditch rose and asked why it was that none of his hearers, among whom were some of the ablest surgeons in New England, was willing to lead the way in performing operations of this kind, adding that he was convinced that some one would undertake the task and that in a few years such operations would be done frequently and successfully. He urged Boston surgeons to seize the opportunity and not lose the credit of being pioneers in the movement.

His remarks were coolly received. As has been the case with many a true prophet, his prophecy was unheeded. Men were even heard to remark to each other, as the meeting broke up, that Dr. Bowditch was in his dotage and that his friends ought to prevent him from talking in public on subjects he knew nothing about. But events proved that he did know, much better than any of his critics, what he was talking about, and the result of their shortsightedness was that, in this country, surgery of the upper abdomen was developed, not in Boston and New England, but in Rochester, Minn., and in the Middle West.

At the present day, there are many members of this Society who are not open to Dr. Bowditch's criticism. Their work in brain surgery, gynecology, orthopedics, genito-urinary surgery, and fractures and dislocations, to say nothing of other fields, is evidence that Boston surgeons are doing their part in promoting the progress of surgery. But those of us who inhabit the smaller towns of New England, has not the criticism some application to us? Are we not leaving too much of the work to the Boston men? It is true that we have not the advantage of living in a great medical center, but that advantage is not a necessity to the performance of good work. We country men may not be able to equal the achievements of our Boston colleagues, but if each of us will contribute his mite to the cause of surgical progress and see to it that his mite represents his very best effort, I venture to say that the effect on the Society as a whole and on its individual members will be startlingly beneficial.

In this new beginning of the Society's life, we all hope and expect that it will occupy a position of influence in the medical profession. It is already a body of which we are proud to be members: let us try to make it a Society whose honorary membership will be a prize to be coveted by surgeons from other states and countries. Let us not be content with keeping up with the procession; let us do our utmost to lead it.

Original Articles.

DIAGNOSIS OF THE LESIONS OF THE NERVOUS SYSTEM PRODUCED BY VIOLENT EXPLOSIONS IN CLOSE PROXIMITY WITHOUT EXTERNAL LESIONS.

By Tom A. Williams, M.B., C.M., Edin., Washington, D. C.,

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The name commotion has been used without sufficient precision, being applied equally to the result of physical disturbances of the nervous system and to the syndrome which occurs on account of the psychic impression caused by the explosion. The individual tendency of people to be mastered by the words they use has led to much confusion in consequence. Certain observers make a diagnosis of hysteria in all cases where explosion has not produced visible wounds or where neurological examination has not organic lesion. The tendency to such diagnosis is due to the fact that a large proportion of the cases recover in a few weeks or even days after violent concussion. However, that this generalization is quite unjustified is proven not only by the considerable number of instances where patients whose symptoms have been thought purely hysterical have developed shortly afterwards definite physical signs which at first were absent, but also by the results of experiments with animals subjected to violent explosions.

In a series of experiments producing concussion on rabbits results were as follows: Animals in a large meshed cage showed only slight and evanescent stupefaction. Rabbits which were in a ditch and subjected to explosion evidenced dyspnea from the gas remaining in the trench. When the animals were suspended above the level of the residual gas some of them showed no symptoms, others were depressed and inert, while others showed marked excitement, one of them fleeing in screams whenever approached. But in nearly all there was an increased respiratory rate for half an hour. There was no correspondence between the first symptoms and the progress of the case; for instance, an animal which would lie inert with contracted pupil would appear quite well the next day, while another which seemed much less affected died the following day. Two animals which seemed to recover completely within a day died eight and thirteen days later.

COMMOTION IS THE REAL CAUSE OF MANY OF THE SYMPTOMS WHERE THE SKULL HAS BEEN INJURED

Great stress has been laid upon the "subjectiveness" of some of the functional disturbances which prevail in patients who have been commotioned by a violent explosion. Those symptoms which have been considered "subjective" are accordingly treated with the lightness which is unfortunately usually attached to that word in clinical medicine. This tendency has been the more strong because of the fact that so many of the men who have been commotioned have been able to go straight back into the line after the occurrence, even when in the exceedingly dazed state. Apparently not many of these men relapsed, and hence it was supposed that the complaint of the patients who have been evacuated to the interior were largely products of cultivation, suggestion, or simulation. The uniformity of the complaints did not seem to refute this reasoning, for do we not remember the uniformity which we were taught to expect with regard to the phenomena of hysteria, which we now know to have been in the main phenomena of culture. The "general" nature of the chief features, namely, headache, cerebral over-fatigability, insomnia, nightmares, changeableness of humor, dizziness, absences, a sensation of cloudiness, were supposed to be the standard complaint of the so-called "neurasthenic," whose disease no pathologist attempted to locate in any particular area of the cerebrum.

The fact that this series of syndromes also showed itself conspicuously in patients who had been trephined did not obviate this interpretation, for observers are unanimous in declaring that the functional disturbances after injuries to the skull are dependent neither upon the seat of the lesion nor upon the apparent gravity of the trauma; for it is observed that functional disturbances showed themselves just as conspicuously in patients in whom only the outer table of the skull had been injured as in patients with deep penetrating and crushing wounds of the brain itself. Indeed, if anything, the latter patients were less prone to serious and long-continued inconveniences than the former. The accompanying table is based upon a study of 470 cases of wounds of the skull. Of these cases only 83, however, were utilized for only of these was it possible to have detailed information about the site, extent, and depth of the wound, and about the details of the surgical operation and of the immediate and secondary complications.

Table I.

	Lesions of the External Table		Lesions of the Internal Table		Open Dura Mater		Lesions of the Cerebral Substance	
	18 cases		28 cases		7 cases		30 cases	
	No. of Cases	Percentages	No. of Cases	Percentages	No. of Cases	Percentages	No. of Cases	Percentages
Headache	16	88.8	25	89.2	6	85.7	20	66.6
Vertigo	9	50	16	57.1	3	42.8	13	43.3
Blurred vision	5	27.7	8	28.5	2	29.5	5	16.6
Fatigability ..	2	11.1	6	21.4	2	29.5	15	50

These general symptoms after skull wounds have been called atopic, *i.e.*, non-localized, by Grasset, because a careful analysis in his clinic of each series of cases studied not only by himself but by Villaret, Mairet, Pieron, Mignard and others, showed that even the clouded vision and the dizziness were unrelated to wounds in any particular locality, and that even the headache by no means predominated at the site of the cranial breach, although of course there often occurred in this area neuralgic phenomena which, however, were quite distinct from the general headache.

Now, these atopic symptoms which usually eventually cease almost completely in every case, are the same symptoms as those which are manifested by commotioned patients who have had no wound at all. Furthermore, in the latter patients, where opportunity for investigation has existed, there have been found very decided abnormalities of the cerebro-spinal fluid, almost invariably hypertension, usually hyper-albuminosis, and sometimes lymphocytosis as the cases increase in gravity. Again, a considerable number of commotioned patients have shown for a short period, in addition to these symptoms, definite, even when slight, physical signs of focal lesions of the brain.

Thus the resemblance of the two syndromes is so striking that their identity is manifest, and the problem of the nature of the persistent functional disturbances in both can be studied together as a whole. Of course, it is very easy for anyone to declare that he has headaches, is easily fatigued, has attacks of dizziness and blurred vision, especially when exertion is demanded; that he cannot sleep, and has nightmare; and it is not difficult to change one's humor. So that to a superficial observer it might be justifiable to characterize these individuals as perseverators, if not simulators. But, the syndrome is accompanied by other phenomena which are not of a simulable character. For instance, a walk of half a mile will not produce in a simulator hollow eyes, a shrunken and pallid face, profuse sweating and diminution of blood pressure from all of which he will recover only after several hours, nor can one very readily simulate the vascular congestion immediately provoked in such patients when they stoop down, nor will simulation maintain the vascular turgidity of the face and the modifications of the pulse which so many of these patients show. Nor can the modifications of the oculo-cardiac reflex usually seen in these patients be simulated. Nor can the modifications of heat regulation which they show. Furthermore, a simulator who suffers from short absences will be almost certain to declare that they are prolonged. Moreover, he will stagger when he has attacks of vertigo and prolong and exaggerate this phenomenon. Again he will seek to provide occasions to manifest his malady instead of seeking to avoid them as does the true *commotionné*. Again, a simulator will not confess that his headache is ever ameliorated, whereas the true *commotionné* is only too glad to be free of it if it is only for a few hours, and will readily confess that it tends to improve at night.

LABYRINTHINE REACTIONS.

Modifications of the labyrinthine reactions were present in 87% of 46 soldiers, of whom 28 had head wounds and 18 were merely commotioned.

In only 22 of these was the hearing diminished. A large proportion not exactly stated, however, had tinnitus. In only seven was the Romberg sign present, and none of the patients presented other neurological signs.

The most fruitful test was the galvanic one which is much simpler than either irrigation or rotation, and which does not produce to the same degree the obnubilation which is sometimes very disturbing to the patients. This usually appears after the vertigo and before the turning of the head. The patient cannot reply to questions. He feels stupefied—his ideas become confused. It may persist for minutes after the stimulus has ceased, and even produce loss of consciousness. It may occur when there has been no vertigo, nor deviation of the head. It is most significant when it occurs after stimulation of one labyrinth and does not do so when the diseased side is stimulated.

The most objective part of the test is the inclination of the head, which was modified in 40 of the cases, either by a failure of reaction on one side or by the need of a much stronger current to provoke it, or by change of direction from the normal, which is towards the positive pole, sometimes accompanied by a turning of the chin towards the negative pole. The most common modification is that the head turns away from the injured side whichever way the current is able to pass, along with a rising of the threshold of excitation.

This increase of threshold occurs only in 34.7% of the cases, the limit of the normal being regarded as 5 milliamperes. In seven of the sixteen cases the threshold for both ears was raised, while in nine cases one labyrinth was excitable with the normal amount of three milliamperes. Of the six *commotionnés* who showed a raise of threshold, three presented it on both sides.

When the wound was lateral the increase of resistance to the current was on the same side in six cases, and on the opposite side in three cases, where, however, the wound was large, both parietal and temporal regions being damaged. In all cases, when the threshold was raised for both sides, that traumatised was always the greater. In three cases showing fissure of the occiput in the middle line there was a lowering of the threshold on both sides.

Vertigo is provoked with an only slightly greater current than is inclination of the head, but the two reactions are proportional in health. In disease, however, there may be a great disproportion, the head not inclining until the current has been increased by over 10 milliamperes, whereas it should normally deviate with an increase of not over five. Sometimes the inclination is slow, sometimes abrupt. It may be preceded by oscillations—sometimes even towards the opposite side, or antero-posteriorly. In rare cases the reaction is reversed, but the usual modification after commotion is for the inclination to occur always toward the same side whatever the direction of the galvanic current. In occipital wounds, however, the inclination is sometimes before or backwards.

Other reactional movements of the patient, such as that exemplified by the changing of the plane of the extended arm, are also modified during galvanic stimulation of the labyrinth. In cases where the reactional movement does not occur in the course of a galvanic stimulation which produces vertigo and nystagmus, we can infer a lesion central to the bulbo-pontine region and we should find other clinical signs of disorder of the cerebellar apparatus. The angular deviation of the walk, is another valuable method of searching for disturbances of the equilibratory function.

Any of these tests can be made by means of irrigating the ear also. In many cases irrigated, there was a great discordance between the responses to galvanism, which affords a test more delicate than either the tests by rotation or douching, although, of course, it has not the analytic value of these.

MODIFICATIONS OF THE CEREBRO-SPINAL FLUID.

These occur in a considerable percentage of cases of commotion. They do not usually appear till the end of the second day. They consist of a considerable increase from the normal 30 mm. of water up to 60 or even over 100 of the intrathecal pressure as revealed by a manometer such as that of Claude which reveals an increase of pressure which may continue for several weeks or even months.

It is a little simple aneroid manometer carefully graduated in centimeters of water which is connected by means of a rubber tube to a three-branch cock. The latter, according to its position, brings the needle into communication with the outside or with the manometer.

In the *first position,* a very fine wire is introduced which allows us to clear the needle or to inject a solution of stovaine or novocaine for the anesthesia: lastly and most important the cerebro-spinal fluid can be collected should any escape.

In the *second position,* the pressure of the cerebro-spinal fluid is measured.

With this apparatus, the tension may be evaluated from the beginning without any loss of fluid.

When one is used to performing lumbar puncture, it is sufficient, before crossing the "ligamentum subflava," to turn the cock to the position 2, which connects the needle with the manometer. As soon as the needle has penetrated into the arachnoid, the pressure is shown by the manometer.

If the operation offers any difficulty, the cock must be turned into position 1, and the mandrel should be introduced.

There is nearly always increase of albumen, reaching from 0.50 to 1 gr., or even more after precipitation by acetic or nitric acid.

It should be measured with an albuminometer consisting of a tube of 5 mm. in diameter and graduated in distances found empirically to correspond with one centigram per litre of cerebro-spinal fluid according to the model of Sicard.

In the absence of a graduated tube an approximation can be made by observation of the precipitate when the clinician is experienced.

This is out of proportion to the cytological reaction, which may be slight or even absent. Indeed, a low cell count, along with the other symptoms plead strongly for a commotional reaction as against an inflammatory or syphilitic one.

The proportion of glucose is not disturbed in these cases except for a slight increase. There is no diminution of chlorine.

Of course in the early period there may be hemorrhagic complications which change completely the above picture and show themselves as bloody discolorations, often very faint, and the presence of the erythrocytes and leucocytes, and later on by the presence merely of chrystals of hematin.

THE CEPHALO-RACHIDIAN FORMULA IN CEREBRAL COMMOTIONS.

From the observation of about 50 *commotionés* studied in a center of the army it is shown that:

1. The percentage of abnormal rachidian fluid was 50%.
2. The habitual existence of a typic commotional formula characterized by hyperalbuminosis (0 gr., .85 to 1 gr. per litre) above all other important cytochemical modifications.

There is noted the absence of meningeal participation (normal chloride and permeability: no leucocytosis), the absence of infection, no fibrine, no hypoglycosia) a marked tendency to hypersecretion (hypertension, frequent hyperglycosia, habitual hypoleucocytosis 0.3 to 0.7 elements for a square mm., perhaps because of the dilution of the fluid). The contrast between the hyperalbuminosis and the normal or diminished leucocyte rate constitutes the albumino-cytologic dissociation or the most often, the albumino-cytologic inversion.

The commotional formula is finally characterized by its evolution: ordinary appearances of the albuminosis after two or three days, habitual disappearance in the course of some weeks or months, the indefinite persistence or very slow regression of the syndrome. This cephalo-rachidian reaction of pure commotion without external wounds is met with in all its characters in many commotions associated with wounds of the scalp where the importance of the nervous lesions may be misappreciated because of the slightness of local lesions. This rachidian formula by its cytologic percentage and its post-traumatic evolution allows us to assert at the same time the reality and the organicity of the commotion.

Psychogenetic Consequences. The preceding considerations show that it is comparatively simple to diagnosticate (and the instances of these are not few) where there are disturbances of physical origin.

It must not be forgotten, however, that lumbar puncture has a powerful suggestive influence therapeutically. It is in this way that one can explain a case reported by Pastine where an officer showed a slight lesion of the pyramidal tract, some cerebral dysargia, and intracranial hypertension besides subjective symptoms of pain in the back, deafness, and diminution of sight, as well as slowing of the intellectual faculties, indifference, and amnesia. After a lumbar puncture, which did not improve him considerably the pain of a second attempted puncture which failed caused a sudden and almost complete cure. We have a right to suppose that the painful puncture simply coincided with the period when the physical symptoms had retroceded leaving, however, the patient in the belief, and with the feeling that he could not think or feel or remember, the impression and the inertia of the severe commotion still dominating his mind. The mechanism is quite similar to that described in 1909 in the traumatic neurosis, from a discussion of which I quote the following:

"The initiator of symptoms may, of course, be an actual accident of disease; and equally so it may be derived from the mere idea of injury or disease, so that the clinical problem to be analyzed may be exceedingly complex. . . . The commonest of the fears which result from accident or injury is that of bodily harm. It is difficult for a person of this type, when ignorant of his own structure and functions, to shake off the foreboding created by an impressive catastrophe: and it must not be forgotten that what others regard as trifling, the victim may look upon as catastrophic; judged by its possible effect on him. Prepossession by the idea of one's own disability is an inevitable consequence. This leads to abstraction from and inattention to the affairs of ordinary life which, if not trifling by comparison in the patient's mind, at least cannot claim the attention properly needed. Hence ensues the well-known diminution of the capacity to think clearly and to attend to current affairs.

Other Psychological Disturbances. At the commencement, inertia is decided with marked impairment of altruistic and even of family sentiments, and complete loss of the finer feelings; even the more elementary feelings may suffer, as both appetites and taste may cease for a time.

Later on irritability replaces inertia: it is accompanied often by an exaggerated egotism, with hostility to any interference with immediate desires. Sometimes, however, fear dominates rather than rage: either of these may occur in fits. In the mildest cases these attacks occur only in nightmare.

The tendency to active dreaming of the patients—even while partially awake—encourages a formation of hallucinations and mild delusions in which the patient may, or may not, relieve for the time.

Amnesia. In testing the intelligence of the patient during recovery it is very important to obtain his coöperation, so that the patient may think it is to his interest to make the most of his abilities: accordingly it should be indicated in his presence that his responses are important in our eyes. But the doctor must take precautions against medical suggestion.

Psychiatrists have been too long content with psychoreactional descriptions which do not help us very practically. Now, in some of these cases reports have been made of icterus, and in other of glycosuria, polyuria or retention of chlorine; while in the others modifications of the blood pressure have been ascertained, and in many a very marked vasomotor instability with dermographia of various types. In some there are modifications of blood coagulability. Disturbances of gastric and intestinal motility have been observed; and some cases show an alternation of excitation and inhibition of different functions of the autonomic and sympathetic nervous systems including pupillary phenomena. It is needless to go into a minute description of the autonomic and sympathetic syndromes which show themselves more or less purely in these cases, but their number presents an unexampled opportunity for a detailed investigation into the clinical pathology of these conditions.

This syndrome may occur quite apart from any actual shock or explosion. It may express itself as the summation of a long period of dread or of a series of alarms. Indeed, in some cases there has been no active conscious dread but there gradually supervenes a state of inquietude; the patient's nerves are on edge, as he expresses it. (See Emotions in Warfare, *N. Y. Med. Jour.*, 1919, Sept. 12.)

Complications. These symptoms seem so clear as to raise no difficulty in the diagnosis of such cases. But they are pure only in the severer cases. In most of the milder cases, they are complicated by either or both of the aforementioned conditions of entirely different mechanism, *viz.,* hysteria and hyperemotivity. These complications are frequent. The patient is often easily disturbed by noises which may make him anxious, somewhat confused; he is often preoccupied by his state of health, and loses his courage and belief in eventual recovery. Sometimes a state of chronic or highly irritable anxiety complicates, but the mechanism of this is different from that of commotion itself, as has been explained.

These patients are particularly liable to pithiatic (symptoms created by suggestion) accidents, more especially when the real commotion has not been severe. It is the coincidence of the rapid cure by suggestion of these mild cases with the fact that many patients without actual commotion present a picture resembling it but due entirely to psychogenetic causes, that is responsible for such opinions, that commotion owes its effects to impressions upon a vivid imagination prepared either by heredity or by exhaustion.

DIAGNOSIS.

The most manifest and rapidly ascertained signs of commotion are the general muscular relaxation, including that of the face, the muscles of the hands and the hypo-tension of the pulse, the dilated pupils and the diminished reflexes, both tendinous and cutaneous. The only one of these symptoms which can be simulated is the general muscular relaxation, but this is not the kind of reaction which simulators are apt to attempt to imitate.

The above condition may be quite temporary. In order that the prognosis be made quickly it is advisable to examine the cerebro-spinal fluid. If after twenty-four hours, no excess of albumen is found, the diagnosis of commotion can be excluded. The presence of albumen, on the contrary, should forbid the sending of the patient back to duty, although he appears functionally to have recovered. Its presence is believed to be due to damage of the choroid plexus, which permits the transudation without diapedesis of leucocytes. Indeed, the lesions may be severe enough to permit of the transudation of erythrocytes, in which case there will be a yellow tint of the spinal fluid.

There is one fallacy only in relation to this diagnosis, namely, that in conditions of chronic compression such as results from tumor or hematoma, there is usually an albuminosis of the spinal fluid. A man, however, in whom this condition occurs is also sufficiently gravely diseased to be kept away from the front.

The state of hyperalbuminosis without cytological increase contrasts with the increase of cells, even without relative increase in albumen, which occurs in sudden meningeal affections, or even as a result of intoxication of the meninges as in acute acidosis. The cells in this case are usually leucocytes; but in meningismal mumps it is lymphocytes which preponderate as is the case in luetic meningitis also. The condition is accounted for by the fact that diapedesis begins in the early stages of intoxication or inflammation of the choroid plexus before the membrane is sufficiently damaged to permit of transudation of serum. The phenomenon is, therefore, as a rule, quite evanescent, for albumen also becomes excessive in the fluid after one or two days.

The condition after commotion on the contrary, not being due to an intoxicative or inflammatory reaction of the secretory apparatus of the choroid plexus, is not accompanied by diapedesis, but is produced by a mechanical lesion of the membrane, which leads to an exudation of serum without cells, which enters the cerebro-spinal fluid, doing so by passive convection.

Hyperemotivity is particularly frequent in the milder cases of emotion. In some cases this may be purely psychogenetic reaction, the man's accident imbuing him with a terror of the future. But in some cases it is due to cerebral *sideration.* In this case it is nearly always accompanied by clearly perceptible vasomotor modifications in the head. The congestion aggravated by posture or excitement is seen conspicuously in the superficial palpebral and sclerotic veins. It is often conspicuous, too, in the temporal artery and the large veins of the neck. There is, often, a widening of the eyelids and a prominence of the eyeballs which remind one of the aspect in Graves' disease, especially when the patient shows a tachycardia, which is often the case. But other ocular signs of hyperthyroidism, fine tremor, hyperhydrosis, emaciation, the gastrointestinal symptoms do not appear.

The symptoms which do occur may be attributed to damage of the sympathetic nerves in the head. They are even very persistent, lasting for years, and they occur in cases where hyperemotivity is not a conspicuous feature at all.

This persistence contrasts with the usually rapid disappearance of the hyperemotive syndrome in the patients in whom it has occurred merely as a result of excessive fatigue or of disease. In these men recovery usually occurs in the course of a few weeks, after which they are able to return to their corps. In these cases, the physician usually discerns the signs of malnutrition and exhaustion.

Finally, one has to consider the cases in whom a hyperemotivity has been fostered by the patient's own mental attitude. While these cases have been quite uncommon in the French service, they were very numerous in the British. The occurrence of such cases is dependent upon the general attitude of the medical corps towards the phenomena of pithiatism, and their power to distingush accurately between (1) the cases due to lesions, (2) the cases where a real hyperemotivity exists, (3) the cases where pithiatism is the predominant or sole feature.

The cure of such cases is very easily effected when proper methods are utilized. Still better, however, is the prevention of their occurrence, but this can be done only by a medical profession which has a clear grasp of the essentials and principles required for the treatment and its effective application.

The *differential diagnosis* of the syndrome of hyperemotivity and anxiety from that of cerebral commotion and that of pithiatism may be resumed in the following table:

Table II.

	Commotion (Concussion)	Hyperemotivity	Pithiatism
Onset	Immediate. Subjectively, headache.	Sometimes delayed.	Variable. Pseudoexaggeration.
Affectivity	Inertia or indifference with extreme ductility; later, restlessness.	Exaggerated. Resistance to suggestion or persuasion.	Extreme susceptibility to suggestion or persuasion.
Memory	Retrograde amnesia more or less complete.	No amnesia; but poor fixation.	Unaffected.
Sensibility	Dulled.	Exaggerated.	Unaffected.
Intellection	Much retarded and confused.	Untrustworthy.	Unaffected.
Physical signs	Unconsciousness; focal rare; cerebrospinal fluid; hypertension, hyperalbuminosis; slow or rapid pulse; slow or rapid breathing; pupillary changes; vomiting; incontinence; modification of reflexes; labyrinthine troubles.	Purely functional, such as: Tachycardia, vasomotor disturbances, endocrine disturbances, hyperthyroidism, hypermetabolism (or hypo), hyperadrenia, or hypoadrenia, pupillary dilatation, sweating.	None.
Recovery	Slow.	Slow usually.	Rapid under proper treatment.
Treatment	Rest, lumbar puncture.	Rest, endocrine, assurance or reëducation.	Psychotherapy. Reëducation.

This matter is more fully gone into in my forthcoming book, "Disorders of the Nervous System in Warfare" (Blakiston).

Prognosis. The gravity of a commotion may be inferred in the first place from the history of the duration of complete unconsciousness; but only by objective findings can one decide upon the real gravity of the condition.

The most important of these are those found in the cerebro-spinal fluid. In the grave cases, besides neurological signs and hyperemotivity, there is an exudation of serum and occasionally lymphocytes, which may continue for months, and sometimes of blood. In cases less severe, there is only a hyperalbuminosis with perhaps a diminution of chloride and an increase of sugar. In still less severe cases, the only physical sign is the increased pressure of the cerebro-spinal fluid. In this latter, the prognosis is quite favorable, and the patient should be able to return to duty before many weeks, quite restored; whereas, when there is hyperalbuminosis, some months may be required, and in the severer cases, when there is more, especially when there is a considerable amount of lymphocytes present, a year or more may elapse before the patient is even free from discomfort, and his serviceability as a soldier is scarcely to be expected except in light auxiliary work.

Treatment. All observers have agreed that the best treatment consists of repeated withdrawals of cerebro-spinal fluid until the pressure becomes normal, along with prolonged rest and lacto-vegetarian regime. The most troublesome symptom after the first stages have passed is persistent and even very severe headache; sometimes there is a distinct slowing of thought for a considerable period, and there is always a loss of initiative and an absence of the sense of well-being. Dizziness and tinnitus are also frequent symptoms.

And in these cases usually there is a marked impairment of the vertiginous reaction to a galvanic current passed from ear to ear which should normally occur with a current of less than four or five milliamperes. In these cases a resistance may rise as high as 20 or 30. All of these are relieved by lumbar puncture.

CATAPHORETIC TREATMENT

A pad composed of sixteen layers of lint soaked in a two per cent. solution of salicylate of soda is applied to the forehead, care being taken that the pad is entirely wetted and that its centre coincides with the middle line of the forehead. Over the centre of the pad is placed a metal plate, and the whole firmly bandaged to the head. The metal plate is connected to the negative pole of the battery. A pad of the same thickness, about ten by six inches in size, is soaked in the water, covered with a metal plate and bandaged to the lumbar region. It is necessary that it should be bandaged very firmly, as a loose bandage may lead to a variation of the surface of pad in contact with the skin, due to respiratory movements, causing the current to vary and any rapid variation of the current passing through the head is very unpleasant to the patient. The current should be increased very slowly, taking about twenty minutes to attain to the maximum of twenty milliamperes, at which strength it is allowed to pass for twenty minutes, and then is very slowly reduced to zero. When passing the galvanic current through the head the current must be reduced much more slowly than when passing it through the other parts of the body—the reduction from twenty milliamperes to zero should not be completed in less than ten minutes.

Selected Paper.

A NOTE ON THE HISTORY OF EPIDEMIC ENCEPHALOMYELITIS.

Based upon a Paper Read before the Royal Society of Medicine (Section of the History of Medicine) Jan., 1919.

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> "On l'a dit justement, les mêmes questions renaissent à chaque épidémie catarrhale, et leurs solutions diverses se reproduisent chaque fois à peu près les mêmes."
>
> Bouvier (*Ann. d'Hygiène Pub. et de Méd. Légale,* 1837).

The clinical manifestations which of late years have become associated with the names of encephalitis acuta hemorrhagica, polioencephalitis, poliomyelitis, and so forth, have, there is little doubt, prevailed from time to time, during many centuries, in epidemic form. The occurrences are not new; they have been described again and again in unmistakable language: but, since the overlying nosological, pathological, and etiological conceptions have been ever-varying, we have failed to recognize the historical continuity of the realities. The history of epidemic encephalomyelitis is, therefore, not that of "one disease," but of many; for what we call "diseases" are not natural objects, but conceptual.

We may indeed apply to encephalomyelitis in some degree the words employed by Michel Lévy, in the *Gazette Médicale de Paris,* for 1849, concerning cerebro-spinal meningitis:—

> ". . . point une nouveauté: confondue avec les fièvres cérébrales, ataxiques, nerveuses: perdue dans les énumérations banales et dans les généralités graphiques des épidémistes et des chroniqueurs de la médicine: mêlée à d'autres épidémies plus considérables, comme le typhus, et rattachée à ses manifestations, à titre d'anomalie ou de variété anatomique . . elle échappe à une détermination historique rigoreuse à cause de l'insuffisance ou de l'ambiguité des documents, de l'absence ou de l'imperfection de l'anatomie pathologique."

Nevertheless, though like Lévy, we may not wish "nous exposer à juger aujourd'hui sous l'optique d'une préoccupation synthétique," we must, as did he when observing the almost concurrent outbreaks of cerebro-spinal meningitis and influenza at the Val-de-Grâce, declare that "lorsqu'on voit . . . des combinaisons morbides qui déroutent l'observation vulgaire, l'idée de la continuité des épidémies se présente derrière le fait incontestable de leurs connexions."

This, however, is true: since the prevalences of encephalomyelitis have been irregular and intermittent, and the clinical pictures "protean," almost every epidemic has been hailed as a new disease by many, and described in new terms by someone. Nevertheless it is surprising that only one author, Ozanam, appears to have attempted the history of epidemic encephalitis, and that his work should have been ignored by those who have written the history of poliomyelitis, or the Heine-Medin disease, as well as by medical historians in general. The fact is that those who have written the history of diseases have persistently confused names, notions, and realities.

* * * * * *

Julien Le Paulmier, writing at Paris, in 1578 ("De morbis contagiosis"), observed that the epidemic pestilences due to heavenly influences, are, some grave, and some mitigated, while some are familiar and others unusual, or unaccustomed. And he gave three instances of unaccustomed pestilences, appearing suddenly, as if new diseases.

The first, said Le Paulmier, is the sydropyreton (or sudor Anglicus of 1529) "quæ nostro hoc seculo Britanniam mire efflixit": the second, "destillatio quædam popularis nostris vernaculi *Coqueluche*[*] appellata quæ in nostram hanc Galliam anno 1551 primum suevire cooperta sit": and the third, "paraplegia inaudita sed lethalis quæ in Thaso contigit, flagrantes ardores gravedines anhelosæ aliique non pauci veterum oblivione deleti."

Of the first two, presently.

But what was this paraplegia in Thasus?

Hippocrates, in writing on epidemical diseases says that, in Thasus—I quote from Clifton's translation:—

> "During this state of the weather, in the winter, Paraplegias began and attacked many, some of whom dy'd in a short time, for the disease was very epidemical. In other respects they were well. But, in the very beginning of the Spring, Burning Fevers came on, and continued to the Equinox, and even to the Summer. Most of those escaped who were seiz'd presently after the beginning of the Spring and Summer, and some few dy'd: but when the Autumn and wet weather set in, they prov'd mortal to many. These fevers were of such a nature that where any one bled freely and plentifully at the nose he was sav'd by it more than by anything else."

The Hippocratic constitution of this year was, it is obvious, almost identical with that of 1918; epidemic paraplegia taking the place of our epidemic encephalitis "lethargica." The observation of Hippocrates was doubtless just; for the prevalences of encephalomyelitis have invariably stood in a certain relation to epidemics, and endemic-epidemics, of the "burning-fevers" that we call influenza.

I do not wish, however, to occupy time with citations from the ancients: it is more convenient to begin with the century of da Vinci and Buonarrotti—in what doctors think the dark ages, when, however, as Hallam suggests, "some parts of physical science had already attained a height which mere books do not record."

* * * * * * *

In the last 450 years four periods seem to be indicated in respect of epidemic encephalomyelitis: four periods marked by different phases of medical thought and observation.

During the first, which closes with the era of Willis and Sydenham, wide epidemic prevalences were observed and compared, as a rule, without resolution into component "diseases"; and symptoms obviously due to forms of meningitis, encephalitis, and myelitis were described in relation to vast occurrences that we would now call "disease-groups."

In the second period, which roughly coincides with the eighteenth century, systems of nosology were based upon symptoms; and symptom-groups due to encephalitis and myelitis, as well as to meningitis, were referred to nervous, comatose, lethargic, stuporose, convulsive, apoplectic, and paralytic fevers, usually considered as different elements of special epidemic constitutions.

During the third period, which commenced about the year 1800, persistent efforts were made to distinguish specific diseases by the findings of morbid anatomy. Cerebritis, encephalitis, meningitis, and myelitis were then described, sometimes as "specific entities," sometimes as characteristic lesions of specific fevers such as "cerebral typhus" and the like;

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[*] The influenza which afflicted France during the time of the fifth and last "sweat" in England.

sometimes again as evidences of metastasis of disease from one part of the body to another.

The fourth period, which commenced some thirty years or more ago, is characterized by the distinction of many specific diseases by association with specific organisms. It is to be hoped that this period will prove one in which medicine will so far profit by biology as not to neglect synthetic research in the pursuit of purely analytical investigation.

There is, however, throughout the whole history of these 450 years one tendency in continuity that is manifested by the persistent ascription of certain odd, detached prevalences of encephalomyelitis to varieties of food poisoning.

The Germans in 1529 ascribed some of the maleficent forms of the sudor Anglicus to the eating of fish; and, in 1820, Justin Kerner, of Weinsberg, attributed outbreaks, clinically identical with polioencephalitis, to the eating of Swabian sausages; thereby laying the foundation of the myth of botulism. But it was also long the custom in Germany to incriminate ergot or rye as *the* cause of certain acute, epidemic, and generally febrile maladies, characterized by respiratory and gastro-intestinal catarrhs and exhibiting, as their cardinal symptoms, delirium or stupor, paralysis or convulsions and tremors, and interference with the special senses. These maladies frequently entailed permanent paralysis and withering of limbs, since they affected the young at least as frequently as (according to some authorities more frequently than) their elders.

This was the affection or group of affections known popularly in Germany as Kriebelkrankheit and otherwise: called Raphania in Sweden by Linnæus, since he thought it due to radish-seeds and not to ergot; and, during the last fifty years replaced in the minds and textbooks of Swedish physicians by cerebro-spinal meningitis, poliomyelitis and polio-encephalitis.

The unraveling of its tangled history is no easy task, yet it is lightened by detection of the mystification and suppression of facts practised by some writers whose works have attained renown at the expense of far greater French and Italian epidemiographers. It is in great part this belief in the existence of an *acute*, epidemic, protean, febrile, paralytic, and spasmodic, non-gangrenous form of ergotism that has so long confused the history of encephalomyelitis: and the mystery of its alleged restriction to Germany, Scandinavia and Russia entirely disappears when we find the same malady described in England, in France, in Spain, and in Italy, under different names. For it was not the disease so much as the etiological conception, that had a restricted area of distribution.

To revert, however, to the *first* of Julien Le Paulmier's unfamiliar pestilences, I will only remind you that, while we know very little of the clinical features of the English sweats, save that stupor was a prominent feature of the grave cases, Dr. Hamer has clearly shown the epidemiological features to be those of influenza. The myth that the sweats were, save for that of 1528-29, confined to Englishmen, may be considered now exploded, for each sweat in England corresponded very closely in time to an epidemic, in every European country, that can be demonstrated to have been either influenzal, or encephalitic, or both. It was the *name* that had so restricted an application; the nature of the coqueluche or troussegalant in France, the Hauptkrankheit in Germany, and the mal mazzuco in Italy cannot be seriously disputed.

Nor is it difficult to place the strange disease that, according to Jean de Troyes and de Mézeray, spread through France in 1481-82. This epidemic, "qui attaquoit aussi bien les grands que les petits," "qui mettoit le feu à la teste." —this "maladie de fièvre et rage de teste," —if Zeviani's interpretation of an allusion by Allessandro Benedetto is well founded, was contemporaneous, not only with the epidemic encephalitis (Hecker) or Hauptkrankheit that afflicted Germany and is mentioned in the Frankfort Chronicles, but with a catarrhal and pleuritic epidemic in Italy. It was soon followed by the first "sweat" in England.

I do not propose now to deal at length with the English "sweats." It must suffice to say that a fresh examination of many early continental authors makes it abundantly clear that Dr. Hamer's contentions are just.

It is beyond reasonable doubt that the absurd legends which represent the "sweats" as a disease "sui generis" and, save in 1528-29, afflicting Englishmen only, would not have attained their present currency had the laborious but wrong-headed erudition of Gruner, Hecker, Haeser, and Hirsch been earlier called in question by some one as conversant with practical and historical epidemiology as Dr. Hamer, whose Milroy Lectures (1906) should be carefully read. The "sweats" *were* "influenzas" of malignant and nervous type in some years and places, but often ephemeral, and of the nature of the summer epidemic in 1918.

Since, however, the sweat of 1529 was so copiously described in Germany, it is worth recalling that, according to Schiller and others who gave contemporary accounts, the disease was of an extremely variable character, assuming different guises in different places; and it was of all grades of malignancy. It commenced with short shivers, and, in malignant cases, with convulsions; whilst dizziness and tinnitus were common. Formications, cramps, and weariness, muscular weaknesses, affections of the nerves, of the brain, pain in the head, and stupor ("somnolentia inevitabilisque sopor") were amongst the symptoms in some places of a malady which struck all classes of society and carried off some victims in even a few hours. The breathing was "as if the lungs were seized with incipient paralysis," whilst later "the spinal marrow was affected."

> "Contra, quibus sudor non satis fluxit aut repulsus fuit, mortui sunt, vel asphyxia vel tabe et decidentia membrorum vel paralysi et obnigratione manuum atque pedum."

In those who escaped with their life, paralytic consequences of various kinds were noted.

The very clear indications in Schiller's tract, that epidemic encephalomyelitis prevailed in Germany during the "English sweat" of 1529 in that country, have by most authors been either slurred over or treated as evidence of "ergotism," much in the same way as some Patagonian historian, in years to come, may write of the prevalence of "botulism" in England during the "Spanish" influenza of 1918.

And it is interesting to note that, although Gruner, Hecker, Haeser, and Hirsch all declared France to have been spared the "sweat" in 1529, there is nevertheless the clearest evidence, in Paradin's "Histoire de Nostre Tems," of a malignant and neurotoxic influenza—"une nouvelle maladies et inconnue aux médecins"—which ravaged France in that year.

> "A cette nouvelle maladie fut nouveau nom imposé, et fut nommé *Trousse galand* pour la contagieuse mort qui s'en ensuivoit, avec grande et impourvue soudeinneté."

"Stop-gallant," be it noted, was the name given to our later "sweats" in England.

It is perhaps true that it was only during times of epidemic, and not always then, that the relation of the "nervous" cases and case-groups to the sudoral and catarrhal cases and case-groups was recognized; but Benedetto, when writing "de destillatibus sive catarrhis" (*Omnium a vertice ad calcem morborum signa*), showed that he, at any rate, connected the signs and consequences of what we now call polio-encephalitis and poliomyelitis with the oftentimes epidemic catarrh. Fernel, moreover, who had written of new diseases in much the same strain as Le Paulmier (De abdit. rerum causis: lib. ii, cap. xi) had come to much the same conclusion.

I can only mention in passing, and without comment, the stuporose epidemic in Piedmont and Savoy during 1545-46, described by Sanders and by Ambroise Paré. It, too, like the 1529 affair, was called Thoussegalant, and it was moreover contemporaneous with a "Hauptweh" in Germany (1543-44-45-46) and a camp-disease at Boulogne.

"Trailers," in Leichtenstern's terminology, straggled on during the fifties, and even later, whilst the great pandemic influenza of 1580 had an *avant-coureur* in 1576, described by Ballonius, the French Sydenham. In Yvaren's translation we read thus: "Durant tout l'hiver et au commencement du printemps, il y eut une quantité innombrable de paralysis, et elles ne dépendaient pas seulement d'une fluxion froide partie de la tête . . . on rapportait celle-ci à l'état du ciel."

And Ballonius observes: "Les affections catarrhales se portent-elles à l'extérieur, ou de la tête au organes sous-jacents, on voit maître des paraplégies et des hémiplégies."

The great influenza of 1580 was, in some places, so sudoral that many declared it the English sweat come back again, an so cephalic that Brunner called it, too, the Hauptkrankheit. Sennert himself said of it:—

> "Nonnullis infestavit perpetua in somnia propensio ut in peste fieri solet."

By pestis he meant, of course, the Pestis Britannica of 1529.

The next year (1581), however, was marked at Lüneburg, in North Germany, by an epidemic of palsies in the head and limbs, described by Ronsseus, that, like an outbreak in Belgium during the "influenzas" of 1557-58, has found a place in the later chronologies of "convulsive ergotism." Of this notable epidemic an admirable account is given by Schenkius, copied almost verbatim from Ronsseus, in which are used the very adjectives "novus," and "inauditus," employed by Reusner for the same disease when it reappeared fifteen years later. Schenkius said that it was difficult to determine whether the malady was epidemic or endemic: and made no suggestion whatsoever of ergotism. The illness began with spasticity and palsy of the hands and feet: the patients, sometimes delirious, were often slumberous. The half-closed eyes and open mouth filled with ropy mucus, and the tongue, affected as if paralyzed, all remind us of the descriptions of the botulists; but the statement that sometimes those who recovered found the hands and feet to have lost their office as if the limbs were luxated, makes it clear that flaccid palsies were no unusual sequelae.

Comparison of this account with one of the "spasmodic" form of Heine-Medin disease in Australia by Breinl in 1917, forms one of the most instructive parallels in medicine. The coincidence extends even to the occurrence, in both groups of cases, of severe gastro-intestinal disturbances, as in some of ours during 1918.

In the last decade of the sixteenth century scattered prevalences now recognized as influenzal were freely interspersed by great trailing epidemics very similar to this at Lüneburg, but generally known popularly as Kriebelkrankheit, or Krampfsucht. It is clear from the accounts of both Sennert and Horst that no symptom or sign of polio-encephalitis, poliomyelitis, or cerebro-spinal meningitis was lacking; and Sennert is emphatic that while "nunc cum febre, nunc sine febre," "neque contagio hoc malum carebat."

Neither Horst nor Sennert paid attention to the vulgar etiology of ergot, chick-peas, bad bread, sour apples, mushrooms and the like. They regarded the malady as a "malignant fever with spasms." And, in 1772, Schleger, in a delightful but rhetorical essay, exposed clearly the repeated statement of Baldinger and others that this epidemic had been shown to be ergotic by those who, at the time, described it.

It is worth recalling, too, that Reusner of Frankfort, when writing of the scurvy in 1600, spoke of the Kriebelkrankheit as characterized, when it appeared in 1595, by "veternus, mania, lumbago, paralysis, convulsiones, et morbus, Herculeus," and declared that: "ob symptomatum insolentiam novum esse suspicatum fuit."

Now, in 1597, whilst this malady was raging, or trailing in Germany, a like epidemic appeared in Italy as already in 1529—the year of the sudor Anglicus—and earlier under the name of the mal mazzuco. Zeviani, in 1804, brought forward evidence in favor of the view that this mal mazzuco was an intensely "nervous" form of influenza, and showed clearly that stupor, and katatonia ("morbus attonitus"), were prominent amongst its symptoms.

To reinforce the point that "epidemic catarrh" was widespread in 1597, he cited Schenkius who, writing contemporaneously, appears to have identified the Italian catarrhal epidemic in 1597 with one which invaded Germany "ipso tempore." Zeviani, whose monograph on the epidemic catarrh is one of the best accounts of influenza ever written, identified realities, and refused to be a slave to names and notions.

A few more words are necessary on this question of the mal mazzuco. Zeviani cites, from Brassavola (*Index in Galen*), a passage which, though doubtless authentic, I have failed to find in those prodigious folios. It runs thus: "Pulsus affectus ex phrenitide et lethargo quem nos vocamus malum Mazuchi." Pretty clearly then, the mal mazzuco was a "clinical entity." It had occurred in Sicily, and elsewhere, about 1504-5, at the same time as "encephalitis" in Germany, and shortly before our second "sweat" in England. It was notoriously present in Italy during 1529, when, according to the Teutonic epidemiographers, that peninsula escaped the "sweat," and it recurred at intervals until 1597.

Zeviani was right: the mal mazzuco was an epidemic nervous "disease," closely allied to influenza, of which he considered it a form, or derivative. The clinical picture was variable: whilst occasionally "meningeal," sometimes convulsions, and at others stupor, lethargy, and catalepsy were characteristic symptoms.

It was compared vulgarly, at times, to the cysticercus disease of the sheep, and hence became known as "morbus ovinus," and "morbus arietis." The contemporary name in Germany for influenza was "Schaffkrankheit";

an appellation which, by a happy confusion, was in 1712 given by Camerarius as "Schlafkrankheit."

There is, after 1600, a long, almost silent, period in the history both of influenza and of all forms of encephalomyelitis. But the famous prevalences of 1657-58 (described in England by Willis, and marked in the autumn of the latter year by a strange fever "whereby men were grievously affected in their brains and nervous stocks,"), were signalized at Copenhagen, in 1657, by an epidemic of lethargy, or lethargic encephalitis, that makes the constitution for that year an even juster parallel with that of 1918 than was that of Hippocrates already mentioned.

I do not think that Bartholin's account has been referred to for a hundred years, and therefore cite it, almost in full:—

> "Hyems frigida quidem, sed sine multa nive, in urbe nostra affectus soporosos excitavit, accuratis periodis molestos. Non pauci nostra cura soporem perpetuum evasere. A meridie sopor mensis spacio obrepabat, et ab astantibus excitati in somnum relabebantur. Expurgato capite et exsiccato, imprimis cucurbitulis dorso affixis convaluerunt. Vere ejusdem anni Pleuritides Epidemiæ grassabantur, cum febre acuta doloribus pungivitis. . . . . Declinante veró æstate, febres ephemeræ invaluerunt, spacio 24 horarum desinentes, invadentesque cum vomitu, calore intenso perdurante. . . . .
>
> "Ecstasi quadem correpti de capitis, doloribus conquerebantur. Nonnullis morbilli sociabantur, aliquibus petechiæ."
>
> (*Hist. Anat. et Med. Rar.*, cent v. hist. vi.)

Four years later, in 1661, there occurred in England the famous fever "chiefly infestous to the brain and nervous stock," described by Willis,* identified by him with the German Kriebelkrankheit of 1595-96-97, and recognized by Saillant, in 1776, in a wonderfully lucid paper, as the convulsive epidemic malady wrongly attributed by some to ergotism, and confounded with the gangrenous ergotism of Sologne.

This famous "feavour" of Willis, and the "comatose fever" described by Sydenham, were shown by Dr. Charles Creighton, thirty years ago, to stand for a definite form of illness that, when Dr. Creighton wrote, was not recognized by nosographers.

And Saillant, in his paper, which has somehow escaped the German bibliographers, makes it clear that, though called by him the Morbus Convulsivus Epidemicus, this malady was as protean as only epidemic encephalomyelitis influenza can be, and that in different years, and in different places, different clinical types occurred.

The riddle is now solved. Wolfe's fever represented a convulsive, and Sydenham's a lethargic form of encephalomyelitis occurring epidemically. The details of the argument were given by me in the Chadwick Lectures (1918), as yet unpublished; but it may here be said that Willis's fever was exactly reproduced in Queensland during 1917 (Breinl), where even the flexor spasms, so long and so erroneously held to be characteristic as "ergotism," were observed, as was sometimes the case in London, during 1918, amongst our cases of "encephalitis lethargica."

The European influenzas of 1674-75 were preceded or accompanied by "epidemic psychoses" in Sweden (1673), the Kriebelkrankheit again in Germany (1672-75), malignant fevers with spasms in France (1673), and the comatose fever of Sydenham in 1673-74-75.

Henceforward, until 1800, the history of epidemic encephalomyelitis is that of Kriebelkrankheit (or Raphania, as it came to be called) in Germany, Scandinavia and Russia; of nervous fevers in Britain; of epidemic apoplexies and paralyses in Italy; and of nervous, comatose, lethargic, apoplectic, paralytic, spasmodic and convulsive fevers, as well as spontaneous "hydrophobias," described by Werlhof, Saalmann, de Sauvages, Selle, Vogel, Andry, Hillary, Wintringham, Gilchrist, Grant, and many other epidemiologists and systematists. Much material has been collected: much more perhaps remains for investigation. But one or two landmarks may be pointed out. For example: Albrecht of Hildesheim, in 1695, described a probable case of "encephalitis lethargica" in these words:—

> "DE FEBRE LETHARGICA IN STRABISMUM UTRIUSQUE OCULI DESINENTE."
>
> "Anno 1695, virgo hujus loci, viginti circiter annorum, honesti cujus tam civis I.F. filia in febrem incidit continuam, acutissima cephalalgia siccitate oris et aliis, quæ in ejusmodi morbis acutis notari sunt, symptomatibus stipatam, quorum, tamen praecipuum circa, hoc subjectum in summa ad somnum propensione consistebat, quæ quo magis capitis remit-

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* Pepys, in his diary, mentions the "spotted fever," and also "strange and fatal fevers" as prevalent to an alarming extent in 1661.

> tebat dolor, majus majusque capiebat incrementum, ita, ut quoties a somno excitaretur toties in eundem relaberetur profundissimum. . . .
>
> "Scilicet, a quo tempora meliori prædita erat valetudine, oculorum talis advertebatur distortio, quæ pupillam in utroque versus palpebram adigebat superiorem, inferiori bulbi parte ultra ejus dimidium non nisi album referente." . . . . . . (*Miscell. Curios.*, an. ix, x, obs. i.)

Later, the famous influenza of 1712, so notoriously cephalic and nervous, was signalized at Tübingen by the epidemic, of which so much has been said lately, usually referred to as the "Schlafkrankheit." It is not generally stated that R. J. Kammermeister, or Camerarius, who described it, called it an epidemic febrile catarrh, and identified it with the pandemic of 1580, of which I have spoken. I cite some salient passages in his account:—

> "Hæc autem pleraque omnia quadrabant iterum in febrem catarrhalem hujus anni 1712. Fuit hæc universalis, popularis maxima gravis capiti, sub concursu forte trium, febris, catarrhi, vomitus, magis afflicto; sive contagiosæ vel epidemiæ predicatum meruisse dicenda sit. . . . . Gravedo ista quondam Germanis '*die Schlafkrankheit*' dicta fuit, nunc agrypnia, nunc veterno molestior. Hac vice nomen illud non audii. Nec dormvisse multum nemini, præterquam paucos, opiatis quidem non usos. Noctes utique graves, turbatæ phantasiis frequens etiam per diem querela de afflictis oculis, utut non inflammatis, ægre tamen aperiendis, nec lucem ferentibus. . . . . Eadem Gallis olim audiit 'Coqueluche.'" (*Ephemerides*, cent. iii and iv, t. xxvii, obs. lviii.)

It is on this account that von Economo relies, when suggesting that encephalitis lethargica was recognized, as a "clinical entity," by Camerarius and by precedent observers. Whatever we may think as to the identity of the cases seen by Camerarius with those seen at Vienna during 1917 (and Professor Netter is inclined to be critical, though accepting Albrecht's case), there can be no doubt that influenza prevailed at Tübingen during 1712, and was accompanied by encephalitic manifestations.

I have failed, however, to find any evidence that the name "Schlafkrankheit" had previously obtained currency, and am inclined to believe, as already stated, that there had been a perversion, not without significance, from the earlier nicknames of "Schaffkrankheit" and "Schaffhusten." There may even have been a printer's error!

Much more important, however, than Camerarius's short essay is the account given by Guidetti (in Bianchi's *Historia Hepatica,* 1725, p. 718) of the epidemic constitution for 1712 as observed at Turin. The parallel with that of 1918 at London is extraordinary: clearly, "epidemic stupor" is no "new disease."

Some passages may be given from Guidetti:—

> "Ad Januarii principium nebulae adhuc contumaces in tenuem pluviam liquescebant et statim inter morbos catarrhales varios puta tusses raucedines et ptyalismos irrepsere febres frequenter soporosae, provectis aeque ac juvenibus infensae cum frigido ad caput decubitur, quem febris quidam imminuta prosequabatur. *Aegri interim lente moriebantar vel comatosi vel cataleptici vel aphoni. Plurimi ante obitum convulsionibus torquebantur.*"

It is moreover interesting to note that Heusinger, in his *Commentatio Semiologica,* actually connoted Guidetti's account with that of Willis, and that, according to Guidetti, the "rheumatic epidemic," for so he termed the influenza of 1712, spread, in the late autumn, "inequaliter sed celeriter, per totam Italiam."

In the latter part of 1727, Scheffelius published a now somewhat rare essay, entitled, "De Morbo Epidemio Convulsivo, per Holsatiam grassante oppido raro." The malady, evidently the same as that which occurred at Tübingen in 1729, had been observed by Scheffelius in the spring and summer of 1727. Identified by not a few as the old Kriebelkrankheit, it was claimed by others as certainly due to ergotism, though Scheffelius declared many to have been affected who had not eaten questionable bread. The nature of Scheffelius's powerful argument may be inferred from some of his rubrics:—

> "An morbus novus sit?"
>
> "Epidemici paucissimi sunt novi: exemplo febris catarrhalis 1712."
>
> "Et morbi nostri convulsivi, teste Willisio et aliis," "Horstius eundem morbum descripsit."
>
> "Natura ipsa non est causa."
>
> "Morbum hunc a panis vitio apud nos productum esse non est verosimile sed ex aeris peculiari quadam constitutione."
>
> "Verum istud contagium non est absolutum."

The identification with Willis's fever is remarkable enough, but it is even more noteworthy that Scheffelius found traces of the "same disease" as this of 1727, in some particular accounts of the influenza of 1580, and that his insight was vindicated by the recurrent waves of influenza that continued from 1729 to 1733 throughout the world.

This famous influenza of 1729-33, singularly enough, was, like that of 1712, marked at Tübingen by an undoubted encephalomyelitis, though this time of convulsive type. *Elias* Camerarius, who described it (*Act. Phys. Med.*, ii, obs. cli) clearly recognized the essential unity of the nervous disease and the catarrhal cases. This again seems to have baffled the writers on ergotism, for they have left the account of Camerarius on one side. The common people, as always, he said, accused the weather, the grains, the bread, and the unripe fruits. But he himself thought these but vague conjectures, and expressed no opinion of his own.

A few years later, Kriebelkrankheit, both convulsive and paralytic, was in Brandenburg (1741) the forerunner of influenza in Germany (1742), and the pandemic of 1743; while, in 1745, the same or a similar meningeal, encephalitic and myelitic malady trailed through Sweden, giving rise again to vague conjectures, but being, on the whole, identified clinically with its German congener.

Sequential paralyses were noted: the acute cases were stuporose, mute, and had ocular disturbances.

1754-55-56 and 1757 saw a recurrence in Sweden, again with stupors, delirium, psychoses and mutism, but with convulsions rather than paralyses. This terminated, in 1758, in a peculiar kind of "influenza" (Ozanam).

Boström indeed, at Upsala, had, in 1757, triumphantly identified the endemic-epidemic of these years (known as the Upsala fever, and marked by head-retraction) with a "long known protean fever, everywhere prevalent from time to time, sometimes in one form, sometimes in another." "Hic morbus non est novus," he declared. Nevertheless, the trailing epidemics in the rural districts had again been identified on clinical grounds with the Kriebelkrankheit, though shown clearly *not* to be due to ergot. This being so, Rothman, a pupil of Linné, and with that great man's approbation, elaborated the hypothesis that the stuporose, delirious, paralytic and convulsant "fever," possibly contagious, was caused by radish seeds in the threshed grain.[*] It was therefore christened Raphania: and the disease was known as such for nearly a hundred years. Meanwhile the first case of botulism (or encephalitis due to sausage poisoning) is said, by Kerner, to have been described in Germany in 1755, while Raphania, as we must now call it, occurred there at the same time.

The influenzas of 1762 were catarrhal rather than nervous; but Raphania was again severe in Brandenburg and Zell in 1770, and was held by Selle, amongst other German physicians, to be feebly contagious, a fever, and different, by all the heavens, from true ergotism: 1771 saw a genuine and severe influenza in Hesse, and 1772 influenza and epidemic convulsions in North America. About this time, too, Leidenfrost and Schleger protested vigorously against the notion, again gaining ground, that the acute, paralytic, and spasmodic malady had something to do with the gangrenous, and the chronic forms of ergotism, but in vain; though Haberkorn, earlier, properly had defined it as "die Nervenkrankheit."

However, 1773 was the year of Sir Walter Scott's infantile paralysis and, in 1772-73-74, the so-called miliary fever prevailed extensively in France, accompanied by nervous manifestations such as coma and convulsions (Baraillon). In 1775 Andry described admirably what must have been acute bulbar encephalitis in a young woman—he called it "hydrophobia without the bite of a dog"—and, in London, Grant declared that, during the influenza of that year he had lost several patients with the "Comatose Fever" of Sydenham.

During the influenza years 1780-81-82, Butter, under the name of "infantile remittent fever," observed what was clearly the *acute* stage of encephalomyelitis,[†] describing it as a complaint both epidemic and sporadic, and affecting adults as well as children, while, two years later (1784) Michael Underwood noted, as "debility of the lower extremities," the deformities resulting from what must have been the same acute illness.

A celebrated institutional outbreak at Turin, in 1789, has been handed down by copyists as

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[*] It was noticed, or declared, that domestic fowls were at the time affected by what is now called "limber neck." Similar occurrences have been noticed of late years by those who have investigated influenza and poliomyelitis, and by those who believe in botulism (*cf.* Dickson: Botulism, p. 106).

[†] Butter's "infantile remittent fever" was, with rare insight, identified 30 years ago by Dr. Charles Creighton, with Willis' convulsive fever (1661) and Sydenham's "comatose fever" (1673-4-5) *vide supra.*

Raphania; but the accounts given by Corradi indicate clearly, I think, either an encephalitis or a cerebro-spinal meningitis; moreover, influenza was raging in the city at the time.

The third chapter of my story may perhaps be taken to commence in 1800, when Chardel, of Paris, described cerebral fever, or primary inflammation of the brain, as a definite entity: 1799 and 1800 was an influenza season. The world-wide influenza prevalences of 1800-03 were noted in Russia as extraordinarily "cerebral"; and Raphania was recorded there (as again in Scandinavia) in 1804.

The Italian influenza of these years was also very "cerebral," and it was his experiences then, apparently, which led Zeviani to consider the old "mal mazzuco" as "influenzal," or, rather, derived from the "epidemic catarrh.". The celebrated "cerebro-spinal meningitis" at Geneva was in 1805; that of Massachusetts in 1806.

A very interesting point now arises. Influenza had prevailed extensively in Hindôstan about 1800-03, and John Shaw, of London, writing of deformities in 1823, described the case of a young man whose disability dated from an attack of paralysis, evidently poliomyelitic, that he suffered during his infancy in India. Shaw went on to say that he had been told that such "sudden attacks" were common among children in India.

Dr. Ager, of Brooklyn, in a recent paper, lays it down, on the strength of this suggestive remark, that infantile paralysis prevailed to some extent amongst Anglo-Indian children in 1800, and hints that it is really an Asian malady. The coincident appearance of epidemic influenza in India, about the year 1800, does not appear to have struck him as noteworthy. Feiler, writing from Salzburg in 1814, described a case of "Shank-shrinking," as he called it, in a girl aged 12 or 13, afflicted since infancy. She, too, must have suffered about 1802, the year of the so-called sweating-sickness at Röttingen, which was identified, in the midst of influenza, as the mediaeval sweating sickness come back again (Hecker).

Influenza in Europe occurred only in the endemic-epidemic form, though severely, between 1819 and 1824; and many outbreaks were in France and Germany described as miliary fever, or "sweating-sicknesses." It was during these years that Kerner, in Würtemberg, first described the "Sausage Disease," afterwards known as botulism, and that Abercrombie in Britain and Hutin and others in France and Germany, gave so much attention to encephalitis.

Epidemic influenza was severe in the United States in 1824-25-26: indeed, in 1824 Raphania was diagnosed clinically in a certain prison in New England, while, in 1826, Jones declared he had noted the severity of "phrenitis" as well as other nervous affections in the "late influenzas."

The influenzas in Europe, of 1831, 1833, and 1836-37, gave rise to a perfect exuberance of literature concerning encephalitis and myelitis in France, while, from Germany, we heard again of Raphania, by now being examined critically.

In Würtemberg, botulism and acute encephalitis were described within a few miles of each other, in 1834 and 1835. In the same years and in the same kingdom Heine noted his first cases of infantile paralysis, while 1835 saw Badham's cases of the same malady in England, and the publication of lectures by Ryan, a long forgotten London physician, describing, *inter alia,* cerebral, bulbar, and spinal forms of encephalomyelitis in children.

The medical history of these years is indeed remarkable. Lombard, writing from Geneva to the *Gazette Médicale de Paris* (1831 and 1837) drew attention to an unpublished paper by Peschier (1820) describing the cerebral and nervous forms of the influenzas of that period during which Kerner ascribed to "sausage poisoning" certain similar "clinical entities" that Stoker afterwards declared that he had seen the same year at Dublin.

But Lombard expressed an aphorism that is worth recording, since it embodies the experience of Hippocrates, of Ballonius, of Bartholin, of the two Kammermeisters, and of Guidetti, when he said:—

"La grippe est souvent *précédée* par une constitution éminemment nerveuse, dont les caractères principes sont de porter le trouble dans les fonctions du cerveau et des nerfs encéphaliques." Ducros, Montain, Pétrequin, and Récamier made clinical observations in the same sense, and Gintrac, of Bordeaux, in a paper that I have not seen, described "epidemic stupor in children"— "coma sans danger"—as prevailing in the early spring of that notable influenza year, 1837. Malcorps, of

Brussels, went further. He divided the historic influenzas into two categories: one, vernal, catarrhal, and benign, as in 1658, 1742, 1743, 1762, and 1780; the other, autumnal, or hiemal, and marked by "prodromes nerveux, caractère adynamique, gravité plus grande," as in 1580, 1676, 1730, 1737, 1775, and 1837. Surely our "encephalitis lethargica" of 1918 should be reckoned amongst the "prodromes nerveux" of the influenza of 1918, which, in point of fact, *combined* Malcorps's two categories.

The influenzas of 1841-45 were evidently accompanied by much infantile paralysis in the British Isles, described by West, Kennedy, and MacCormac; much encephalitis, cerebro-spinal meningitis and "cerebral typhus" in France; encephalitis, botulism and more infantile paralysis in Germany; and, in Italy, the extraordinary "Tifo apoplettico-paralytico-tetanico," which, though now thought to have been cerebro-spinal meningitis, was, at the time, identified clinically (1) as the sweating sickness of the Middle Ages (Agostinacchio), (2) Raphania (Semmola), and (3) encephalitis and influenza.

In Scandinavia and Russia, Raphania and epidemic psychoses prevailed throughout these years, while the influenzas in the United States during 1842-43 had been preceded by the outbreak of infantile paralysis described by Colmer in 1841; and Dunglinson had noted the great increase of encephalitis everywhere at home and abroad.

The great influenza pandemic of 1847 was mainly catarrhal, but the lesser waves of 1850-51, 1855, and 1857 were very "nervous."

In Würtemberg, in 1850-51, there were again outbreaks of botulism and encephalitis; and the famous epidemic of Calw, glorified in Fritz's essay as one of the spinal and bulbar forms of typhoid, was either Heine-Medin disease or nothing.

Raphania was flickering out in Sweden in the "fifties," for it then and there was beginning to be called cerebro-spinal meningitis; but at the same time south-western Germany and Bavaria, with Hesse-Nassau, again suffered an extraordinary medley of outbreaks of botulism, Raphania, localized influenzas, encephalitis and the like diagnostic "entities." In 1856, Heusinger, of Marburg, studied the question of acute and chronic ergotism in the light of actual experience and came to the conclusion that some of the old epidemics had been probably typhus—*i.e.,* "cerebral typhus," or cerebro-spinal meningitis and encephalitis.

Influenza came back, not as a great pandemic, but diffusedly, in 1866-67. There had been some infantile paralysis at Paris just before: but botulism and Raphania again appeared in Würtemberg and adjacent districts in these years, during which Stuttgart suffered severely from influenza, while the last trace of Raphania and epidemic psychopathy in Sweden (1868) coincided with the first recognized outbreak of poliomyelitis in Norway (Ruhräh).

Poliomyelitis was epidemic on quite a large scale in Philadelphia, in 1871-72-73-74: influenza was "universal" in the States in 1873, and continued diffused therein until 1875, reaching France in 1874-75; and the first recorded *epidemic* of poliomyelitis in the latter country was in 1875.

1880-81 is a year now generally recognized as one of scattered influenzal prevalences—it was then that Wernicke and Etter described their cases of polio-encephalitis.

Poliomyelitis was then epidemic in Sweden and noticeable in England also, while in 1884 Strümpell enunciated his now well-known views on the essential identity of polio-encephalitis and poliomyelitis.

The pandemic influenza of 1889-90 was *preceded* by Swedish outbreaks of "infantile paralysis," studied by Medin, and by the scattered diffusion in the Mediterranean basin of a "new disease," afterwards decided to be cerebro-spinal meningitis (Bezly Thorne). It was *followed* by the famous "Nona" of Lombardy and Hungary: identified by Netter with the "encephalitis lethargica" of last year and this: the newest of new diseases! Yet surely it was none other than the old mal mazzuco!

We reaped an aftermath of the great 1889-90 pandemic in minor waves of influenza, accompanied by encephalitis throughout the world, till 1895. In 1895 there was not only the Stockholm poliomyelitis, but, very curiously, an epidemic of "grippe" and acute encephalomyelitis at Toulouse, studied by André, who described it in his book on influenza, declaring that polio-encephalitis had proved to be a contagious malady, and suggesting that it represents a local and intense form of "grippe nerveuse."

About this time, too, Oppenheim and Cassirer had rediscovered Wernicke's "encephalitis acuta hæmorrhagica" and had shown it to be, in the main, influenzal.

Moreover, it was also in 1895 that van Ermengem observed the Belgian outbreak which, while clinically polio-encephalitis, was declared to be the old Swabian "botulism," and ascribed to an organism which has been found twice only (if ever) in the body of anyone dying of this alleged "disease." This bacterial botulism of van Ermengem cannot well be distinguished *clinically* from the older sausage disease of Justin Kerner, and it is also clinically identical with certain forms at least of mal mazzuco and Raphania.

The convulsive forms of the mal mazzuco and of Raphania, on the other hand, seem indistinguishable from the convulsive, or spasmodic forms of Heine-Medin disease described by German and Austrian observers a few years ago, and from the "mysterious disease" epidemic in Australia during the spring of 1917.

The events of the last twenty-five or thirty years have hardly yet obtained the dignity of history. Nevertheless, without doubt, culminating as they do in the recent world-cycle of poliomyelitis, polio-encephalitis, cerebro-spinal meningitis and influenza, they amply vindicate the view as to the *epidemiological* relation at least between these various diseases, expressed for poliomyelitis by Boström in 1910, and for cerebro-spinal meningitis by Dr. Hamer, on many occasions.

The relationship between these "diseases," and some others as well, to those who have examined the evidence, is not superficial and based upon any confusion. Any confusion that there may be has arisen by reason of well-meaning attempts to establish an artificial, even if convenient, set of distinctions as something which corresponds to realities in nature.

In this connection reference should be made to the important paper by Looft, which may be found in the *Nord. Medic. Arkiv* for 1901, (afd. ii, Häft i). Looft, while professedly giving the history of cerebro-spinal meningitis in Norway between 1875 and 1897, throws into high relief the extraordinary clinical and epidemiological relationship between polio-encephalitis, poliomyelitis, cerebro-spinal meningitis, and epidemic catarrh. For, without doubt, many of the cases ascribed by him to the third of these diseases, and shown to be connected with the fourth would have been attributed more justly to either the first or the second: a point that has been suggested also by Foster and Gaskell.

In the recent Chadwick lectures I dealt at greater length than is now possible with the history of all these affections: and I then tried to show, as to-day, that their epidemiological association (if we have regard to realities and not to names, or to concepts) has been repeatedly recognized since the time of Hippocrates.

This association, recognized by Boström in 1757 and by Zeviani in 1804, undoubtedly will be discovered again in the near future.

Independent observers, such as Lewis in America (*Interstate Medical Journal,* 1918, v, p. 396) and Saunders of Grahamstown, are everywhere now contributing their quota, and formulating their conclusions, in support of the synthetic tendency. The recent experiences of Marcus at Stockholm (*Berliner klinische Wochenschrift,* 1918, lv, pp. 1151-2) and the observations of Sainton, and of Chartier (*Presse Médicale,* 1918) should not pass unheeded.

In the meantime the position may perhaps be thus summarized:—

(1) Clinical occurrences of the nature that we now ascribe to encephalomyelitis, or encephalo-myelo-meningitis, have been recorded in modern times for at least 450 years.

(2) In great part these occurrences have been noted as incidental to major prevalences, known historically as the sweating sicknesses, the epidemic catarrhs, or influenzas and the like.

(3) Special prevalences of these occurrences have also been described as manifestations of special diseases. These special prevalences have usually appeared shortly before or shortly after major "influenzal" epidemics, or else in geographical proximity to endemic-epidemic and endemic influenzal prevalences.

(4) Epidemic encephalo-myelo-meningitis represents an intensive and specialized reaction that has the same epidemiological relation to pandemic influenza as have the prevalences and epidemics of "septic" pneumonia,

of gastro-intestinal illness, and of other maladies described as occurring before and after the wide diffusions generally referred to as pandemic influenza.

(5) Owing to the relative infrequency of epidemic encephalomyelitis and its marked variation in type, historical investigation is necessary in order that contemporary occurrences be viewed in a correct perspective.

One detail deserves mention, here and now, for it shows the difficulty of historical investigation at short range.

The great epidemic of poliomyelitis in and about New York during 1916 followed closely upon a prevalence of "grip" in the States, the like of which has not been known since 1889-90. Yet this wave which "swept through" a continent has completely eluded the attention of those who have written the "history" of our recent influenza! It was well described, however, by Capps and Moody, as well as by others, in the *Journal of the American Medical Association* for 1916.

Once more, there is nothing new in the notions here put forward. Many writers, perhaps most notably Dr. Hamer in our time, have recognized the clinical affinities and epidemiological liaison between what we now recognize as epidemic forms of encephalomyelitis and meningitis, on the one hand, and the epidemic catarrhal fever, or influenza, on the other.

* * * * * *

Hic morbus non est Novus: and we must pardon Polydore Vergil who, as was declared by the scholar met with on the way to Montesino's cave, forgot to tell us who was the first in the world to be troubled with a catarrh. And I think I know why Sydenham commended to doctors the study of Don Quixote!

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One of the most important aspects of preventive medicine is the problem of human infection carriers in the transmission of disease. This volume presents to the medical profession the most recently acquired information on this subject, including knowledge which has been gained since the outbreak of the war in the protection of our troops from epidemics. "Human Infection Carriers" has been written primarily for students in order to give them a more thorough knowledge of the epidemiological aspects of infectious diseases and teach them to recognize carriers by laboratory methods. The author has attempted to collect in this volume all the important data concerning the most recent work and methods. This book considers the problem of human infection carriers in connection with those diseases of bacterial origin or which are due to the activity of a filtrable virus in the dissemination of which healthy persons play a part. The diseases considered include cholera, diphtheria, typhoid and paratyphoid fever, dysentery, epidemic meningitis, poliomyelitis, pneumococcus pneumonia, certain streptococcus infections, and influenza. In connection with these maladies, the author has discussed active and passive carriers, the duration of the carrier state, the habitat and virulence of organisms, the mode of infection, and the management of the carrier from the standpoint of the public health officer. In the appendix are included a list of the most important state laws, municipal ordinances, and federal interstate regulations dealing with the carrier problem. This volume should interest the medical student, the health officer, and the general practitioner.

THE BOSTON
Medical and Surgical Journal
Established in 1812

An independently owned Journal of Medicine and Surgery published weekly under the direction of the Editors and an Advisory Committee, by the BOSTON MEDICAL AND SUGRICAL JOURNAL SOCIETY, INC.

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THE BOSTON MEDICAL AND SURGICAL JOURNAL
126 Massachusetts Ave., Corner Boylston St., Boston, Massachusetts.

IN THE INTEREST OF CRIPPLED CHILDREN.

THE education and care of crippled children in the United States has not received as yet sufficient consideration either by the Government, the medical profession, or the public in general. In order to present the facts relating to the provision now made for these children and the feasibility of organizing public school classes for them, an investigation has been conducted and reported by Miss Edith Solenberger, at the request of the Commissioner of the Bureau of Education. It is a regrettable truth that although there are many thousands of crippled children in this country, probably quite as many as there are deaf and blind, there is in most of the states less adequate provision for them than is available for the deaf and blind, the feeble-minded, and the incorrigible children. Not only are there no classes especially arranged for these unfortunates in many states, but there is also no equipment, such as suitable desks and seats, to lighten the burden of their deformities and make it possible for them to make the best of their handicaps.

It is of course true that crippled children desire to be like other children, and tend to grow abnormal to a greater degree than is necessary if they are made objects of unintelligent sympathy, favored pityingly by their parents, and encouraged to mingle little with other children of their own age. There is no doubt that the companionship of other children in the schoolroom and on the playground contributes greatly to the development and happiness of the cripple. Some children with slight deformities can attend regular school classes with normal children and be benefited by so doing. Others, however, need special training. These children could attend classes regularly if they were conducted with due consideration of physical limitations and if provision were made for the transportation of children and for their comfort and safety during school hours. In addition to educational and medical interests, it is to be remembered also that children who are sensitive about their appearance and incapacity find untold comfort and relief in being among children who have similar deformities and difficulties.

In six large cities of the United States,—New York, Chicago, Philadelphia, Baltimore, Cleveland and Detroit,—special classes for crippled children have been organized in public and private day schools. The day school classes show a gradual transition from private to public responsibility. Education boards generally can be convinced that it is their duty to provide a teacher and special seats and other equipment for crippled children, inasmuch as they would be entitled to their equivalent if they were normal. Two other items which cities usually are more reluctant to consider favorably are the transportation of cripples and the provision of free lunches. In Cleveland, Ohio, a school for cripples has been evolved slowly. The work was begun by a group of women known as the Sunbeam Circle; they first gathered together a few crippled children and furnished for them a teacher. Later the board of education provided the teacher and erected a suitable building for the children, and now even transports the children to school and back and provides for them free lunches. Similar results have been accomplished in Chicago, Detroit, and Baltimore.

Children are admitted generally to the classes upon recommendation of the Department of Medical Supervision. The most usual causes for crippled conditions are infantile paralysis, rickets, certain inflammatory diseases, bone tuberculosis, and accidents. Most classes include cripples of all the foregoing physical types. There are only four day school buildings in the United States,—in Chicago, Cleveland, Boston, and New York,—which were designed and built especially for the use of crippled children only; more often the children attend special public-school classes which are held in rooms set aside for them in ordinary school buildings. This is the case in Philadelphia, Baltimore, Detroit, and in some of the public classes in Chicago and New York, where the best rooms, with sunny exposure and on the first floor, are given to the crippled children. In these rooms adjustable seats and desks are provided usually, and where necessary, wheel chairs, couches, folding chairs, blankets, and sweaters are included in the equipment. In none of the public day schools for cripples are there special rooms or buildings designed for the use of outdoor classes. As fresh air is of the greatest importance in the cure of crippled children, particularly for those suffering from bone tuberculosis, it would be an advantage if public day schools would make some provision for outdoor classes. In most cases, the crippled children attending public school classes for cripples are under the supervision of an orthopedic surgeon, although the relation of the school to the surgical and medical treatment of the children varies in different cities.

In mental progress, it is remarkable to observe the good work done by a large proportion of crippled children. In spite of their physical handicaps, short sessions, and liberal rest periods, many of them are able to advance as rapidly as ordinary children. This is due in part to two facts: (1) classes are small and each child is given considerable individual attention, and (2) because of their limited physical interests, cripples are often unusually earnest students. A special problem is presented by the fact that very often both curable and incurable cripples are included in the same classes. It is important that for those who are only temporarily crippled and desire to return to their regular classes after a short time, the subjects and methods of instruction resemble as far as possible those in ordinary public school classes. As yet there are no special high schools in the United States for cripples, and no high-school buildings with class rooms offering accommodations needed by crippled children.

It is particularly desirable that the cripple, limited in the pursuit of manual occupations by his physical deformities, be given the best possible mental training to recompense him for his handicaps and provide for him some means of an intellectual career which will make small demand upon his physical capacity. The survey of what has been done by the public schools in a few cities has disclosed the need for more active interest in the welfare of our crippled children.

THE AMERICAN COLLEGE OF SURGEONS.

The American College of Surgeons enters in its seventh year upon a new epoch of American medicine, upon an age of research and investigation full of promise for coming generations. At the annual meeting held in New York on October 20-24, 1919, the developments in the organization and administration of the Clinical Congress and of the American College of Surgeons were summarized in the report of the Secretary General.

The Congress and the College were organized as a result of the recognition by large numbers of surgeons of the superiority of clinical demonstrations in teaching and interesting surgeons in a way in which the older method of academic society proceedings with scientific papers and discussions failed to do. Previous to the organization of this society, surgeons used to assemble at various medical centers to watch the leaders in those cities; as an outgrowth of these meetings, there was founded the Clinical Congress of Surgeons of North America, which later developed into the American College of Surgeons. It was soon found necessary to establish a College to control the clinical society and to standardize the surgery exhibited at the meetings. In 1912, therefore, at a meeting in New York, attended by twenty-six hundred surgeons, a plan was suggested for the organization of the American College of Surgeons. In November, 1913, the first convocation was held and the Fellowship of the College extended to ten hundred and sixty-five surgeons, a membership which has increased to over four thousand from the United States and Canada at the present time. The increase in the membership and activities of the college made it necessary for the organization to expand and be provided with adequate space and equipment. After considerable debate, therefore, it was decided that Chicago be made the permanent home of the institution. Through the generosity of lay and professional citizens, it has been possible to secure in that city property suitable for administrative purposes for many years to come. The future expansion of the institution will include the building of the John B. Murphy Memorial Hall and its accessories, the establishment of a working museum, with its building and upkeep independently endowed, and, also through independent endowment, the establishment of a department of literary research, either with or without a medical library.

The war service rendered by the American College of Surgeons has been notable, for more than three-fourths of the Fellows of the Association have been in their country's service. But the war has not prevented progress along many lines of work, and it can be continued now with increased vigor and enthusiasm. In his presidential address, Dr. William J. Mayo has outlined the scope and purpose of the organization, and has pointed out its future policy and promise. Already, under the leadership of Dr. John G. Bowman, Director of Education, considerable progress has been made in the standardization of hospitals; for one thing, the majority of American hospitals will institute the restricted staff and will install the laboratory facilities and record systems deemed essential by the American College of Surgeons.

There will be admitted to the Association only those men who can fulfill the educational, scientific, and moral standards of the American College of Surgeons. It is hoped that in the next decade there will be eligible at least ten thousand surgeons. Dr. Mayo believes that in this generation at least, men of excellent character who possess high technical skill, although without fundamental training, should not be refused admission to the College. In future, however, it is likely that the College will require not only that the candidate be a graduate of a reputable medical school and have had hospital experience and be licensed to practise medicine, but also that he shall have had a special training in some particular surgical specialty which he is to practise. This training would require at least three years. Dr. Mayo is of the opinion that although the time spent in the professional part of a surgeon's education should not be shortened, preliminary education should be so arranged that medical students could be graduated at an earlier age. He suggests that there be adopted a six-year course of grammar school education, divested of any university significance, and a three-year high school course, in which the university be considered for the first time. In some of the cities of Minnesota, university high school courses are given with university credits, thus increasing the capacity of the university for giving advanced education.

During the seven years of its existence, the American College of Surgeons has made considerable progress toward the betterment of the surgical service to the people of North America. Now that the war no longer curtails its activities at home, the Fellows of the Association may hope to promote still further the research and investigation which will raise surgical standards and achievement in this country to unsurpassed excellence.

EXTENSION COURSES IN MEDICINE.

In commendable pursuance of an excellent policy recently established and already adopted in Worcester and Springfield, announcement is made of another series of lectures in the Worcester Extension Course of the Harvard Graduate School of Medicine. The first of these lectures was given on December 17, 1919, by Dr. James P. O'Hare on "Advanced Diagnostic Methods in Kidney Diseases." The schedule for the remainder of the course is as follows:

January 7 and 14, 1920—Dr. Franklin W. White. Lectures and Case Teaching in Gastro-Enterology.

January 21 aid 28, 1920—Dr. F. B. Lund, Surgical Diseases of the Stomach.

February 4, 1920—Dr. Lincoln Davis. Acute Surgical Conditions of the Abdomen.

February 11, 1920—Dr. Wyman Whittemore. Surgical Diseases of the Thorax.

February 18, 1920—Dr. William C. Quimby.

Diagnosis and Treatment of Surgical Conditions of the Kidney.

The lectures will be given at the Clark University, where accommodations are ample and a lantern is available. Dr. Ernest L. Hunt is the local director of the course. This series of lectures, which should be as popular as that of 1917, demonstrates the advantages of this method for bringing the benefits of expert post-graduate instruction in medicine to busy practitioners for whom otherwise it might not be available.

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MEDICAL NOTES.

HOSPITAL SHIP "RELIEF."—The United States Hospital Ship, *Relief*, believed to be the first of its kind ever constructed, was launched on December 23, at the Philadelphia Navy Yard. It has a displacement of 10,000 tons, is 483 feet long, and has a speed of 16 knots. The vessel will carry 560 beds, with complete operating rooms and field hospital equipment, and was built at the cost of $3,250,000.

THE LANE MEDICAL LECTURES.—The Lane Medical Lectures were delivered on December 8, 9, 10, 11, and 12, in San Francisco, by Dr. Alonzo E. Taylor, professor of physiological chemistry at the University of Pennsylvania. His subject was "Feeding of the Nations at War." Dr. Taylor was sent abroad under the auspices of the American Minister to make a scientific study of the care of the allied prisoners in Germany. He was particularly interested in the food problems associated with the nutrition of people at war. During the period in which America was engaged in the war, Dr. Taylor served with Mr. Hoover's Food Administration. He was a member of the Committee on Research and Public Health of the Food Administration, and a member of the commission sent to Europe to study the alimentation problems of the allied nations. He later represented the Department of Agriculture upon the War Trade Board. Since the signing of the armistice, Dr. Taylor has been representing the Food Administration and the American Relief Administration, particularly in the Balkan countries.

APPOINTMENT OF DR. KLEINER.—It has been announced that Israel S. Kleiner, Ph.D., has been appointed professor and head of the department of physiological chemistry at the New York Homeopathic Medical College and Flower Hospital, New York City. Dr. Kleiner was formerly associate in physiology and pharmacology at the Rockefeller Institute of Medical Research.

APPOINTMENT OF DR. H. G. FITZGERALD.—Dr. H. G. FitzGerald has received an appointment as Professor of Hygiene at the University of Toronto, to succeed Dr. J. A. Amyst, who has been appointed deputy minister of health in the Federal Department of Health, Ottawa.

NEW BUILDING FOR NEW YORK DEPARTMENT OF HEALTH.—An appropriation of one million dollars has been granted by the Board of Estimate for the erection of a new building for the Department of Health in New York City. It will be erected on a plot of ground, 100x100, on West Thirtieth Street, between Seventh and Eighth Avenues. In it there will be provided space for the offices of the director of the Bureau of Hospitals and for the director of the Bureau of Laboratories. The first floor will be given up to the Bureau of Records, and others will be used for a health station, laboratories, and a medical library.

WASHINGTON UNIVERSITY MEDICAL SCHOOL.—The sum of three hundred thousand dollars has been received by the Washington University Medical School, St. Louis, for the endowment of its department of pharmacology. Half of this amount was given by the General Education Board and the other half was raised by the Medical School.

APPOINTMENT OF DR. N. W. JANNEY.—The appointment of Dr. Nelson W. Janney, New York City, as director of the new Memorial Laboratory of the Santa Barbara Hospital has been announced. This hospital was founded by the late Dr. Nathaniel Bowditch Potter for research on metabolistic diseases.

APPOINTMENT OF DR. R. B. SEEM.—Dr. Ralph B. Seem of Baltimore, assistant superintendent of the Johns Hopkins Hospital, has been appointed superintendent of the Billings Memorial Hospital, Chicago.

ADVANCE IN PRICE OF HEAVY CHEMICALS.—A report issued recently by the Drug and Chemical Markets announces that the prices of heavy chemicals are advancing, owing to scarcity of many products and the reduction of output caused by lack of fuel. Producers of sulphuric acid have contracted for almost their entire output for 1920. The sharp advance in caustic soda during the week has brought many inquiries and considerable business. Alum, bleaching powder, ammonium sulphate, bichromate of potash and bichromate of soda are higher.

All bromides have advanced, thymol and metallic mercury are higher, and Java quinine is lower. Glycerine has been advanced by producers owing to the small output, all soap factories having felt the shortage of coal. Botanicals are higher.

Aniline salt, paranitraniline, dimethylaniline and liquid sumac are higher, and there have been no declines in the dye-stuff market.

Oil of cloves has been advanced by leading essential oil houses in New York. Spearmint oil is scarce and higher. Redistilled peppermint oil is stronger. Ceylon citronella is higher. Demand for all products is increasing and prices are tending upward.

Linseed oil is in active demand, and crushers have advanced the price for deliveries from December to March. Other vegetable oils are dull. In animal oils there is a steady business, and fish oils are somewhat scarce and prices are firm.

BUBONIC PLAGUE.—Reports from two countries mention outbreaks of bubonic plagues recently. Word has been received from Constantinople that the disease is spreading among the poorer districts of the Turkish capital and that it is even invading European quarters. The bubonic plague is reported to have attained grave proportions also at Las Rosas, Santa Fe Province, Argentina, where there have occurred several deaths. The sanitary committee has asked for help, and the National Department of Hygiene has begun a war on the rats infesting grain warehouses.

GIFT TO THE YALE SCHOOL OF MEDICINE.—Property valued at $200,000 has been given to the Yale School of Medicine for general endowment by the death of Mrs. Levi Shoemaker of Wilkesbarre, Pennsylvania.

APPOINTMENT OF DR. ROBERT GESELL.—Dr. Robert Gesell, of the Department of Physiology in the Washington University Medical School, St. Louis, has received an appointment as Professor of Physiology in the University of California.

WARNING AGAINST TYPHUS.—The League of Red Cross Societies has issued a warning of the danger of the spread of the typhus epidemic to Western Europe and America unless additional aid is given the campaign against the spread of the disease in Poland. France, Portugal, and Rumania have responded promptly. At the request of the French Red Cross, the French Government will be asked to appropriate 1,000,000 francs (normally $193,000, now about $105,000) for establishing additional sanitary units in Poland. The Portuguese Red Cross has given 5000 francs for the campaign, and the Red Cross in Rumania has set aside 20,000 francs for this purpose.

BOSTON AND MASSACHUSETTS.

WEEK'S DEATH RATE IN BOSTON.—During the week ending December 20, 1919, the number of deaths reported was 210 against 334 last year, with a rate of 13.75 against 22.20 last year. There were 32 deaths under one year of age against 38 last year.

The number of cases of principal reportable diseases were: Diphtheria, 62; scarlet fever, 77; measles, 210; whooping cough, 38; tuberculosis, 47.

Included in the above were the following cases of non-residents: Diphtheria, 12; scarlet fever, 12; tuberculosis, 3.

Total deaths from these diseases were: Diphtheria, 2; measles, 4; whooping cough, 1; tuberculosis, 19.

Included in the above were the following non-residents: Diphtheria, 1; tuberculosis, 3.

Influenza cases, 7.

THE NORFOLK DISTRICT MEDICAL SOCIETY.—A meeting of the Norfolk District Medical Society was held at the Boston City Hospital on December 30, 1919. Visits were made to the wards of the South Department and a demonstration was given of the Schick test. Among the subjects considered at the meeting were "Periods of Contagiousness and Manner of Spread of Acute Exanthemata," "Treatment of Pertussis," and "The Diphtheria Problem." The meeting was held under the supervision of Edwin H. Place, M.D., Physician in Chief of the South Department.

The Society of American Bacteriologists.—Meetings of the Society of American Bacteriologists were held in Boston on December 29 and 30, at the Harvard Medical School, and on December 31, at the Institute of Technology.

Massachusetts Society for Mental Hygiene.—At the annual meeting of the Massachusetts Society for Mental Hygiene, Tuesday afternoon, December 9, 1919, at the Twentieth Century Club rooms, the members present elected Mr. Herbert C. Parsons and Mr. G. B. Johnson to serve for a term of five years on the Board of Directors, together with the following, who were reëlected:

Dr. Walter F. Dearborn, Dr. George T. Tuttle, Dr. A. E. P. Rockwell, Mr. Alvah Crocker, Miss Edith N. Burleigh, Rev. Fr. M. J. Scanlon, Dr. E. W. Taylor, Dr. L. Vernon Briggs, Dr. Samuel B. Woodward, Dr. William N. Bullard.

After the reading of the reports, the President of the Society, Professor William H. Burnham, gave a very interesting talk on how the scope and aim of mental hygiene seem to enlarge every year and thus the opportunity for service in this field was never so inspiring as it is today. In this connection he spoke of the urgent need of mental hygiene in the schools; he said that "nearly all of the troublesome members of society, the incompetent, juvenile delinquents and those in the hospitals for the insane, at some time passed through our schools"—and that nearly all of the irresponsible, the combustible material that spreads the contagion of disorder and unrest, were also in the public schools a few years ago.

President Burnham called for remarks from the members and President Charles W. Eliot spoke on the relation of the public schools to mental hygiene and of industry to mental hygiene. He pointed out the fact that we need the aid of mental hygiene societies to enable our public schools to develop all the finer qualities in human nature, not only to make the dull brighter, but to enable our schools to develop with special care our superior children. "The whole field of industry is wide open to the aid of societies just like this and to men who are being successful in testing mental qualities."

NEW ENGLAND NOTES.

War Relief Funds.—The principal war relief funds of New England have reached the following amounts:

French Orphanage Fund	$531,020.38
Italian Fund	316,368.26
French Wounded Fund (for the American Memorial Hospital at Rheims)	280,402.74
Polish Fund	134,004.11

Miscellany.

RESUMÉ OF COMMUNICABLE DISEASES FOR SEPTEMBER, 1919.

GENERAL PREVALENCE.

In the month of September there were 4,190 cases of communicable diseases reported compared with 6,726 cases for the same month the previous year.

Anthrax.—Four cases were reported during the month, of which number three received their infection from hides. The remaining case was apparently infected by a shaving brush he had recently bought. As he burned the brush, a laboratory examination could not be done.

Diphtheria increased markedly over the August total, in which month 324 cases were reported, whereas 529 cases occurred in September. The increase in cases is in the eastern and northeastern sections of the state.

Influenza is showing no signs of becoming epidemic at the present time. There were 226 cases reported in September.

Measles increased 43 cases over the previous month. 179 cases being reported for the current month. This disease seems more active in the area south of Brockton.

Scarlet Fever.—There were 407 cases of scarlet fever in the state during the month, an increase over the 248 cases reported in August. The communities showing the greatest increase are grouped in the northeastern part of the state.

Typhoid Fever cases increased from 135 cases reported for the previous month to 146 cases for September. Of these cases, eight were due to infected milk, in two cases the milk was infected by a carrier and the infection was received while on a trip to New Hampshire. Contact with persons ill with typhoid was responsible for 15 cases. Food, infected by a probable carrier, caused 11 cases. Drinking water from a polluted spring and a polluted well, each found to contain colon bacilli, caused seven cases. There were 83 cases in which the source of infection was not found and case records for the remaining 22 cases have not yet been received.

Typhoid Fever Outbreaks.—An outbreak of 11 cases of typhoid fever occurred in Attleborough. Investigation by the local health officer and the State Department of Health failed to definitely locate the cause. Careful investigation excluded a suspected water supply and ice supply. The evidence collected was finally sufficient for epidemiological purposes to determine the cause to be a food handler who is probably a carrier. He denied ever having had the disease but has a positive Widal test. Repeated examinations of his feces and urine were negative, so the typhoid bacilli are probably given off at intermittent periods. For this reason the suspected carrier is not working at an occupation that necessitates his handling food.

In Lowell six cases were reported in addition to three August cases. all cases taking milk from the same milk dealer. Investigation was at once carried out by the local board of health and State District Health Officer and evidence collected showed that bottles were being collected from houses where persons were sick with typhoid fever. Examinations were carried out on employees of the milk route and dairy, but no carriers or clinical cases were found on the milk route, thus the infection was apparently spread by infected milk bottles.

RARE DISEASES.

Anterior Poliomyelitis was reported from Boston, 2; Fall River, 1; Holyoke, 1; North Adams, 1; Palmer, 1; Revere, 1; Swampscott, 1; Weymouth, 1; total, 9.

Anthrax was reported from Boston, 1; Chelsea, 1; Peabody, 1; Salem, 1; total, 4.

Dog-bite was reported from Dartmouth, 1; Lowell, 1; Taunton, 1; total, 3.

Dysentery was reported from Boston, 2; Brookline, 1; Cambridge, 1; Quincy, 2; total, 6.

Epidemic Cerebrospinal Meningitis was reported from Boston, 9; Chelmsford, 1; Chelsea, 1; Cohasset, 1; Fall River, 1; Framingham, 1; Lowell, 2; Lynn, 1; Somerville, 1; Ware, 1; total, 19.

Malaria was reported from Barre, 1; Boston, 2; Lexington, 1; Northbridge, 1; total, 5.

Septic Sore Throat was reported from Arlington, 1; Boston, 1; Cambridge, 1; Fall River, 1; Haverhill, 1; Lowell, 4; Medford, 1; New Bedford, 2; Newburyport, 2; Somerville, 1; Wareham, 1; Wayland, 1; Woburn, 1; total, 18.

Tetanus was reported from Barnstable, 1; Franklin, 1; Pittsfield, 1; Somerville, 1; Worcester, 1; total, 5.

Trachoma was reported from Boston, 4; Cambridge, 1; Northampton, 1; total, 6.

NOTICE.

Boston City Hospital.—The January clinical meeting of the Boston City Hospital will be held on Thursday, January 8, 1920, at 8 P.M., in the Cheever Surgical Amphitheatre.

Program:—Case demonstrations; Clinical Value of Laboratory Blood Findings, Dr. Larrabee; Interpretation of Wassermann Reactions, Dr. Boardman; Relative Clinical Value of Kidney Tests, Dr. Ohler; Value of Protein Skin Reactions, Dr. Sanborn; Discussion by Drs. E. Joslin and Roger I. Lee.

Halsey B. Loder, *Chairman.*

SOCIETY NOTICES.

Suffolk District Medical Society.—A combined meeting of the Suffolk District Medical Society and the Boston Medical Library will be held at the Library, 8 The Fenway, on Wednesday, January 14, at 8.15 P.M.

Dr. Francis Carter Wood, Professor of Pathology at Columbia University, and Director of Cancer Research for the George Crocker Research Fund, will speak on "Some Vital Problems in the Diagnosis and Treatment of Cancer."

Guests will be welcome.

Middlesex South District Medical Society.—The regular midwinter meeting of the society will be held at the Boston Medical Library, on Wednesday, January 14, 1920, at 12 o'clock, noon.

Dr. Cyril Richards will give a lantern-slide demonstration and talk on clinical diagnosis, surgery and pathology of the urinary tract. The discussion will be opened by Dr. John H. Cunningham.

Lyman S. Hapgood, *Secretary.*

New England Pediatric Society.—The sixtieth meeting of the New England Pediatric Society will be held at the Boston Medical Library on Friday, Jan. 16, 1920, at 8.15 P.M.

The following papers will be read:

1. The Feeding of Normal Babies, with Special Reference to Milk Modification, Maynard Ladd, M.D., Boston.

Discussion to be opened by W. W. Howell, M.D., Boston; and A. C. Eastman, M.D., Springfield.

2. The Feeding of Normal Children during the Second Year, John Lovett Morse, M.D., Boston.

Discussion to be opened by Charles H. Dunn, M.D., Boston.

3. Chronic Intestinal Indigestion in Children over One Year of Age, Philip Sylvester, M.D., Newton.

Discussion opened by K. G. Percy, M.D., Boston.

Fritz B. Talbot, M.D., *President,*
Lewis Webb Hill, M.D., *Secretary.*

ERRATA.

We regret the occurrence of the statement in the issue of the Journal for December 25 that Dr. Frederic A. Washburn served during the war as chief surgeon of Base Hospital No. 5. He sailed overseas as commanding officer of Base Hospital No. 6, and later was chief surgeon of Base Section No. 3, American Expeditionary Forces. (This section took in Great Britain and Ireland.)

In an editorial published in the issue of the Journal for December 25, and headed "Classification of Diseases," credit for this work was given to a committee of physicians. It was the work of a committee of record librarians representing the large hospitals of the city, whose work was approved, prior to publication, by the Committee on Uniform Nomenclature.

RECENT DEATHS.

Dr. Allan McLane Hamilton died, on November 23, at the age of 71 years. Dr. Hamilton was at one time professor of mental diseases at the Cornell Medical College.

Dr. John J. Hayes died recently at his home in Boston, at the age of 69. Dr. Hayes was born in Pembroke, Me. At the age of 17 he came to Boston and entered the medical school at Boston University. After graduation he served in a boys' reform school in Providence, and later with the Dedham County Jail and House of Correction. For the last 25 years of his life he practiced medicine in Boston.

Dr. Herbert Orray Benner died at the New England Baptist Hospital, December 22, 1919, aged 54 years. He was a native of Waldoboro, Me., a graduate of Dartmouth Medical School in the class of 1896, and had practiced in South Framingham since 1898 when he joined the Massachusetts Medical Society.